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CONTENTS

REGULARS

On Channel	5	Editor
HF Utilities	14	Bob Bell
Online	20	Patrick McDonald
Bandspread	26	Greg Towells
SCAN	30	Russell Bryant
DX Logbook	44	Rob Williams
DX Propagation Chart	55	Staff
Spectrum Anarchy	57	Rod Fewster
DX International	62	Jack Haden
Repeater List	66	Staff

REVIEWS

Icom IC R-7100 Receiver	22	Russell Bryant
Philips FM650 UHF Rig	46	Ken Reynolds

FEATURES

Linear Amplifiers	8	Ken Reynolds
R Rated Repeaters	13	Staff
Antenna Tuning Units	17	Chris Edmondson
Do It Yourself Discone	37	Staff
11 metre DXpedition	40	Jack Haden
Working DX Correctly	59	Jack Haden

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ON CHANNEL

R RATED UHF REPEATERS

On page 13 of this issue you'll find an expurgated version of a recent conversation, well actually a shouting match by the sound of it, heard on a Sydney UHF repeater channel. Now while the language is a tad on the rough side, the more serious aspect of the report is the continued occupation and use of UHF 'hobby repeaters' (in this instance the 5/35 emergency repeater) by commercial operators.

We all know that the DoTaC folk take little if any interest in what is happening on either CB service, except to occasionally bust some poor sod for operating out of band, but the ever increasing frequency of commercial operators trying to save cash by using 'hobby frequencies' for their business communications rather than spending 'real money' is starting to become a major concern to the genuine hobbyist.

As on the 5/35 Sydney emergency repeater, a couple of commercial users tied up Melbourne's 7/37 for almost three hours recently with an almost non-stop exchange between what was obviously a building contractor with problems and a building material supplier. Unfortunately, neither could be identified and between these two and a heap of angry hobbyists screaming abuse it was a right proper bun fight.

Of course the problems are not confined only to commercial users as there are the usual number of brain dead noddies who appear to obtain some form of satisfaction from playing music and/or making general nuisances of themselves in a variety of ways.

The question is...what can be done to get repeaters back under control before the system gets any worse and eventually becomes virtually useless ?

We would love to say we have the answers, sadly we do not. If you have a serious and practical idea on how to address the problem we would love to hear from you and, if your proposal looks to have a halfway chance of success, we will take it up with DoTaC and see whether we can get something underway.

However, suggestions of castration and proposals involving general bodily damage are not what we're looking for...address any serious suggestions to Repeater Proposal, CB Action, GPO Box 628E, Melbourne 3001.

WHERE ARE THE CLUBS

ACBRO (the Australian Association of Citizens and Band Radio Operators), recently took us to task for not having published a list of CB clubs, something we promised several months ago.

The reason nothing appeared is due simply to the apathy of clubs in providing their details as requested. We were prepared to provide space to list any and all genuine and active clubs but the response was so poor that candidly it was not worth the effort, just as it was obviously not worth the effort by the clubs to supply the necessary information.

Sorry ACBRO, but while you are obviously alive and well (and producing a regular, interesting newsletter) the same doesn't apply to others.

CB Action

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MOBILE ONE
COMMUNICATIONS SYSTEMS

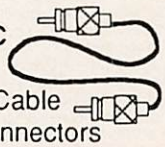
Heavy Duty
27MHz Citizens Band Antenna Kit

BECAUSE OF VARIOUS MOUNTING APPLICATIONS, ALL ANTENNAS SHOULD BE CHECKED FOR CORRECT VSWR

26.9 ~ 28 MHz DX270SAMPK

DX270SS
Super Spring
Skipwhip

SAM
Super Antenna
Mount

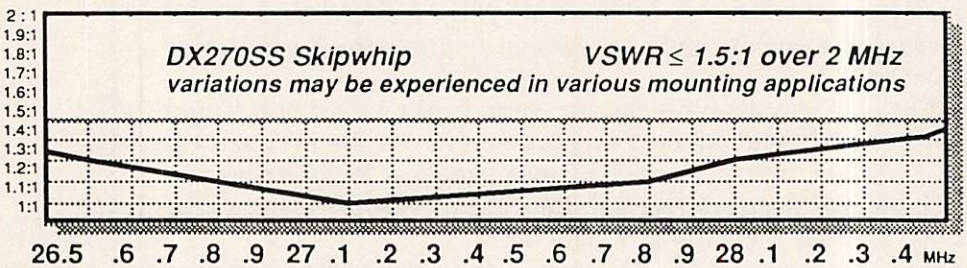


C12C
12ft Cable
& Connectors

FEATURES

The Super Spring Skipwhip pack is a Heavy Duty 27MHz Citizens Band antenna system suitable for Cars, Trucks and Off Road vehicles.
The Super Spring Skipwhip, **DX270SS**, utilises a 70" tapered fibreglass former with precision wound braided copper. This increases the durability of the wind and provides a wider band spread. Incorporated within the structure of the antenna itself is a heavy duty stainless steel spring that reduces the impact shock to the vehicle should the antenna come in contact with an obstruction. The radiator is protected with a rugged polyolefin heatshrink.
Mated with the antenna is the Super Antenna Mount, **SAM**. This 1/2" threaded antenna base is a heavy duty unit that can be installed to a bull bar bracket in seconds by simply inserting the bottom bolt through the bracket and tightening the nut with a spanner.
Also included with the antenna and base is a 3.6 metre coax cable terminated with PL259, **C12C**, connectors ready for use with all popular 27MHz transceivers.
After mounting the SAM base and installing the antenna and cable, use a VSWR meter to check for correct VSWR. If tuning is required, use wire cutters to trim the braided tuning section of the whip. Cut only a small amount (3mm) at a time.

VSWR



SPECIFICATIONS

Antenna Type ..... Continuously loaded helical whip
Base Type ..... 1/2" Super Antenna Mount
Kit Ordercode DX270SAMPK
Cable Type ..... RG58 preterminated with two PL259 connectors
Length ..... 70" (1.83mtr)
Tuning ..... Cut to tune
Frequency ..... 26.9 ~ 28MHz
Impedance ..... 50 Ohms
Max.Power ..... 200 Watts
Termination ..... MIL. spec SO.239 UHF Connector
Application ..... Mobile, bumper or bullbar
VSWR ..... ≤ 1.5:1 OVER 2 MHz

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27MHz CITIZENS BAND

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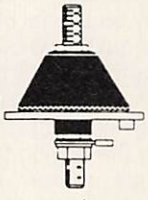
26.9~28MHz

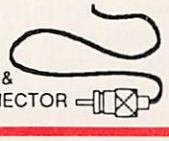
D-4088

DX160SHB
SUPERHELICAL

SAO
HEAVY DUTY SPRING



BSS
HEAVY DUTY BASE



12C
LEAD & CONNECTOR

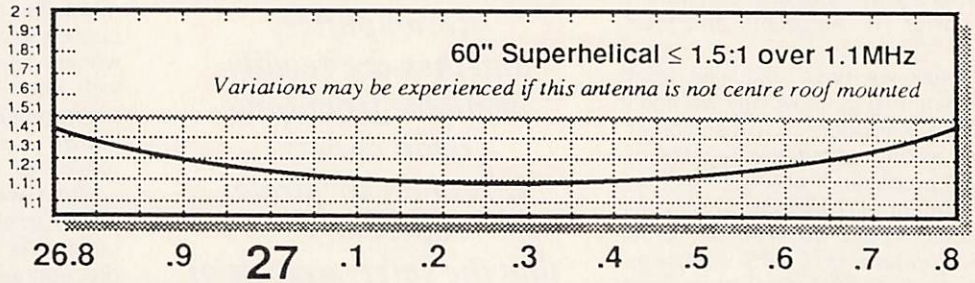
Features

The Mobile One **Superhelical** antenna kit is a complete antenna system suitable for the 27MHz Citizens Band.
The 60" (1.53m) **Superhelical** is a medium duty long range antenna. The uniform winding of the copper wire over the entire length of the durable tapered fibreglass former provides exceptional bandwidth, (1.1MHz) and a low angle of radiation compared with top loaded helicals. The **Superhelical** is protected from the elements with heavy duty **polyolefin** heatshrink.
When mated with the stainless steel spring *model* ***SAO*** and the heavy duty antenna base *model* ***BSS***, the antenna will provide excellent performance with the added benefit of a rugged spring & base mount.

Installation

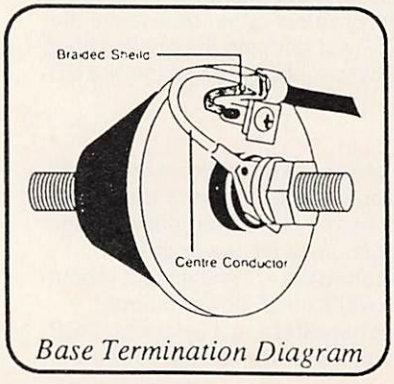
This pack contains the following:
1 x 60" (1.53m) Superhelical **DX160SHB**
1 x Heavy Duty Spring **SAO**
1 x Heavy Duty Base **BSS**
3.6m x RG58C/u with PL259 terminated **12C**
Terminating Base BSS
Disassemble the antenna base and terminate the centre conductor of the coax to the solder lug on the bolt and the braid of the coax to the solder lug under the cable clip on the chrome base plate. See diagram. Reassemble the antenna base onto a bull bar or roof rack bracket and feed the cable to the radio. Screw the spring and antenna onto the base and check for correct VSWR by using a VSWR meter. Tune the antenna for lowest VSWR on channel one by shortening the antenna with wire cutters. Then check channels 20 and 40.
CAUTION: Cut very small pieces (1mm) at a time.

VSWR Centre Roof Mounted



SPECIFICATIONS

Kit Order Code ...	D-4088
Antenna Type	Continuously Loaded Helical Whip
Base Type	5/16" x 26TPI Stainless Steel Mobile
Cable	Mil. Spec. RG58C/u
Connector	PL259
Antenna Length .	60 inches / 1.53 metres
Antenna Tuning .	Cut to tune
Frequency	26.9 - 28 MHz (Citizens Band)
Impedance	50 ohms
Max.Power	200 Watts PEP
Application	Mobile, Bull Bar/Roof Rack
VSWR	≤ 1.5:1 OVER 1.1 MHz



Base Termination Diagram

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THE PROS and CONS OF RF AMPLIFIERS

By Ken Reynolds (Power Band Communications)

The aim of this discussion is to replace rumors with informed, factual information about the performance and safety aspects of using RF linear power amplifiers in the CBRS. It is not our intention to encourage the use of illegal equipment as the bulk of this article will demonstrate. There are however CB operators who will not be discouraged and it is to those that the safety aspects of this piece are directed...

Some readers will know the answers about 'linears' but the majority of CBA readers have only heard about RF Power Amplifiers and do not have any hands-on experience with black-box devices commonly known as "Boots" or "After-Burners".

This issue we decided it was time to clear the air of some of the common misconceptions about the effects of medium to high power RF Amplifiers and their legality.

Every week we have enquiries from operators wanting to know why we don't review Linear Amplifiers in CBA and other operators asking about the legality of using such products. It seems to us that the Department of Transport and Communications *would do well to issue suitable literature to CBRS licensees clearly outlining the full range of dos and don'ts for operators* rather than leave the responsibility of advising the public about their liability to a hobby magazine like CB Action.

THE LEGAL POSITION IS...

The legal position is simply this: Most DoTaC-approved CB radio transceivers already transmit radio frequency energy at the maximum legal power of:-

AM transmitters - 5 Watts input (about 3.5 to 4.5 watts of RF power output);

SSB transmitters - 12 Watts PEP (peak envelope power output to the antenna);

UHF FM transmitters - 5 Watts RF output to the antenna.

Operators exceeding these power levels for transmission of CB radio signals are in breach of the law under the Radio Communications Act and are liable to prosecution or subject to a heavy fine under the new on-the-spot fines system.

Even though the following equipment is illegal for CB operators to use we decided that illegality of an item is no excuse for ignorance about the effects of higher power levels.

Yes, we know that RF Amplifiers are illegal, extremely illegal in fact, and it is not the aim of this article to encourage or condone their use by CBers. Unhappily, however, the fact is that there are CBers who use RF amplifiers and they are readily available from some retail outlets. It is to these 'pirate' operators that the safety aspects of this article are directed while the sections on how they operate and what they do are directed at broadening the knowledge of all operators.

THE HIGH COST OF POWER - and it ain't just $$$$

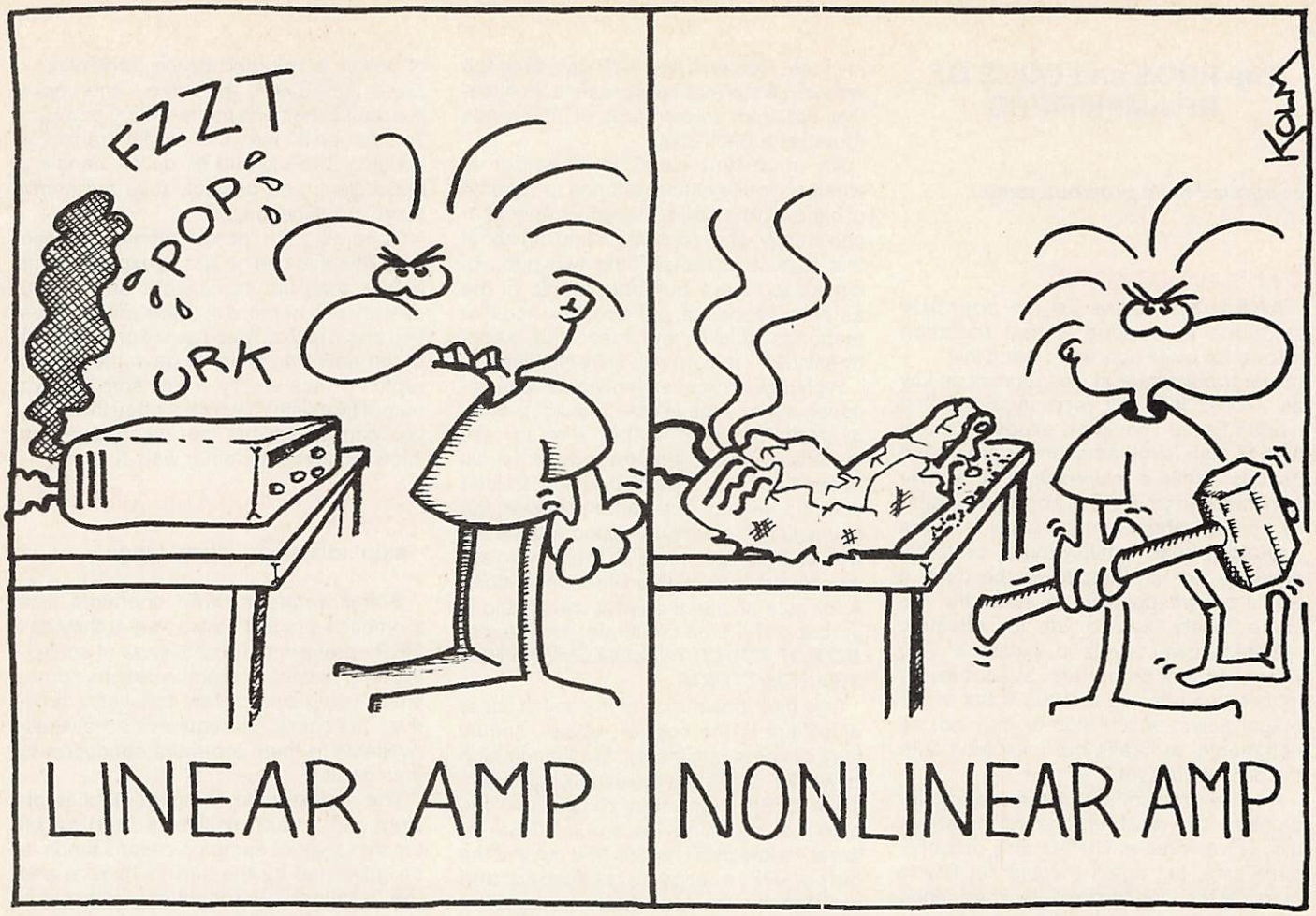
The designers of CB radio transceivers - or for that matter, all commercial transceivers - set out to produce an electronics package in which all sections of the equipment interface and operate harmoniously with each other thus producing a known, predictable result that will meet a tight range of specifications usually laid down by the government of the country in which the gear was intended to be used. Transmitters are required to produce clean, undistorted signals with the RF power level carefully controlled to within the laid down tolerances.

As it turns out, all RF transmitters produce a range of undesirable signals which are reduced to insignificant quantities in the original design by filtering and assuring that none of the power amplifier stages drive the following stage too strongly - 'overdrive'. Overdriving usually causes distortion in the following amplifier stage and distortion of the signal produces a range of unwanted products which appear as radio frequency transmissions on other frequencies inside and outside the Citizens Bands. These unwanted signals might seriously interfere with other systems of which television interference (TVI) is the most commonly known - although this is not the only reason for TVI.

When we decide to add an external power amplifier to an existing radio transmitter it is important to follow the same procedure adopted by the engineers who designed the original transmitter. The RF power amplifier (PA) must be able to accept the transmitter outpower without producing any additional distortion to the signal throughout the whole range of signal variations produced by the transmitter. In other words, the amplifier must be able to cope with an input signal that is greater than anything the driving transmitter can supply or else serious distortion will probably result, and in turn unwanted (spurious) signals will be transmitted over a wide range of frequencies, perhaps causing interference to vital communications many megahertz away.

MORE POWER CAN CAUSE GROSS DISTORTION AND INTERFERENCE

Some linear amplifiers offer a switchable input attenuator to cater for a range of input power levels but this can also be



a problem for an operator who wants more power and ignores the manufacturers recommendations - the result, more power with gross distortion and interference to other services.

Probably the greatest interference is caused by overdriving a PA which is operated from an inadequate power supply. Power amplifiers require heavy duty power supplies with excellent regulation to enable them to draw large amounts of current while maintaining a steady voltage. In many instances the power supply required may be considerably more expensive than the linear amplifier.

In the bigger amplifiers it is not unusual for a current in excess of 50 amps to be required. Operating an amplifier of this nature - about 400 watts output - in most cases will require more current than a car's generator or alternator can comfortably supply to top-up the battery. Smaller amplifiers of course require proportionately less current to operate correctly.

CAUTION MUST BE EXERCISED

Those who are tempted to fire-up a set of **BIG BOOTS** should exercise caution when connecting the amplifier to battery power in a motor car. Because high power amplifiers place very heavy current demands on the electrical system of the car it is most important that proper heavy grade wiring be used to supply the energy to the amplifier. DO NOT connect directly into the wiring loom of the vehicle. The line you select may already be carrying considerable current and if you connect at the wrong spot the danger of fire - burning out the loom - is ever present, and in the worst case the potential is there to destroy the car with fire. Caution should also be taken in using wiring that is too light for the application at hand. Power amplifiers sometimes become unstable and go into a state of 'self-oscillation' when inadequate power is available for their requirements. In this case the usual result is the amplifier outputs a wide range of undesirable signals, draws continuously high current as it 'locks-up' and in some cases will self-destruct because most of the unwanted RF energy is dissipated within the output transistors.

Anyone who has touched the bare tip of a CB antenna while signals are being transmitted will probably have experienced the pain of RF burn and may have later noticed a small black entry mark on their finger tip where the radiation entered their body. Sometimes they can be quite nasty even with 5 watts. An amplifier capable of delivering about 100 times that much power can cause severe burns in an instant. Unlike fire, RF burns are immediate as the radiation enters the flesh at around the speed of light.

TVI OF ANOTHER KIND

As mentioned earlier, television interference can be caused by an improperly suppressed transmitter producing higher than acceptable levels of harmonic radiation. (See SPECIFICATIONS in past issues of CBA for explanation of harmonics.) But, by far the most common cause of TVI by CB transmitters these days is signal overload caused by the television receiver being unable to reject high level signals produced by a nearby CB station. This is usually caused by poor design of the input tuned circuits of the TV or inadequate shielding of the receiver stages thus allowing a strong out-of-band signal to 'sneak' in the back door, so to speak. An operator, by using an RF power amplifier, is able to spread the radius of interference considerably further and therefore inconvenience many more televiewers. Add to this increased distortion on the signal if the transmitter, amplifier and power supply are not suitably matched and the potential for RFI and TVI is immense.

(continued over page....)

The PROS and CONS OF RF AMPLIFIERS

continued from previous page...

RADIATION HAZARD

Although there is no concrete evidence to support a real radiation hazard for radio operators using low power transmitters at frequencies as low as 27MHz it is not recommended that human tissue should be exposed to any type of high level radiation for prolonged periods. While a few watts of RF power transmitted from a CB radio into an antenna perhaps about a metre away from the operator's head - mainly eyes - probably presents no real hazard to the user, it would be irresponsible to state that the same safety level exists for effective radiated power levels in excess of 200 watts. Some amplifiers available for mobile use offer up to 1000 watts of RF output power which may or may not be detrimental to health but I wouldn't take the risk...would you?

As the transmission frequency increases, the radiation hazard increases also. Five watts at UHF is also probably quite safe, but again I would not like to guess at the long term result of prolonged exposure to a couple of hundred watts radiated from a high gain antenna mounted on the mudguard a few feet from my face. Remember, a 6dB gain antenna with 200 watts input will produce an effective radiated power (erp) of 800 watts (double for each 3dB).

An important point to consider is whether your existing antenna is capable of handling the power that your transmitter can supply. Many operators find out about this aspect of transmitting two puffs of smoke too late - puff one: the tip of the antenna vaporises; puff two: the amplifier responds quickly and fuses the output transistors - mainly with HF amplifiers.

High power requires heavier antennas - especially for mobile use - and light, whippy radiators with a thin wire tip are generally unsuitable for power levels above 50 watts. Steel tipped and braided tipped antennas fare better however, the chunky style antennas wound with heavy wire and plenty of metal at the very tip are most suitable for high power transmitters. A full size all metal quarter wave whip is probably the best contender for the job. ***DO NOT TOUCH THE ANTENNA WHEN TRANSMITTING!!***

One final 'down' side to the use of linear amplifiers is the cost of repairs, should they become necessary. Medium to high power RF amplifiers are usually fairly sensitive to SWR and they require that the antenna matching be around 1.5:1 or lower - a low SWR means that most of the output RF energy is absorbed and radiated by the load (antenna system) and that very little power is returned down the feedline to the transmitter. A high SWR means that a considerable amount of power is returned to the transmitter - power amplifier in this case - and under the right conditions the returning power is 'forced' back into the output transistor causing it to exceed its power handling capabilities and possibly fuse the semiconductor junctions.

Generally, RF power amplifiers have very little that can go wrong except for the power amplifier transistors and if you destroy one or more of these silicon chips you might pay as much as the original cost of the entire amplifier to have the device repaired. Incidentally, if your amp has two output transistors, which is often the case, you can almost bet that when one chip 'blows' it takes the other with it!

THE REWARDS OF INCREASED POWER

skip...distance...direct range

Some amateur radio operators limit themselves to low power - what they call QRP - preferring the challenge of achieving long distance communications sometimes using only a few milliwatts, however, the operating frequencies they have available to them are more conducive to their goals.

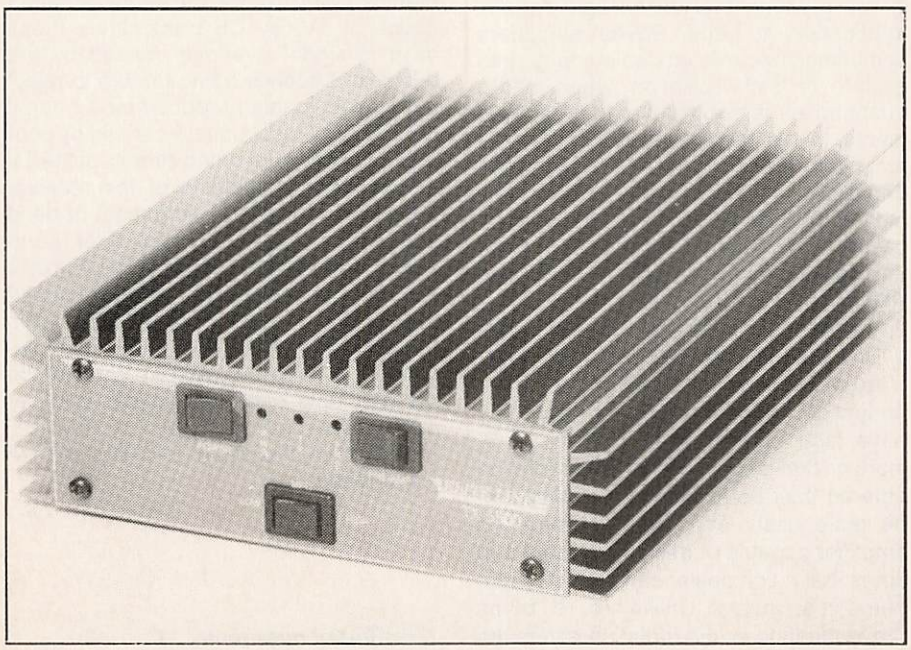
The unfortunate thing about line-of-sight radio transmission is that the ultimate range of communications tends to be governed by the earth's horizon and the terminal broadcasting distance is generally 30 to 40 kilometres. An antenna at high altitude will of course have the effect of lowering the horizon and permit considerably greater distances to be achieved - perhaps 100km or more.

As the radiation travels across the horizon - over level, clear terrain - the bulk of the signal will travel in a straight line penetrating the atmosphere and being lost into outer space. A small amount of the 'grazing' radiation will be bent slightly around the curvature of the earth and will be available to an operator - at a greatly attenuated level - who is located in what might be called the twilight zone or shadow zone. This phenomenon can be directly compared with the residual lighting of the sky just after sunset. As with the sunset, the twilight quickly sinks into darkness and a few degrees further around the curvature of the earth all the transmitted power is lost.

NOTE: At the lower frequencies, transmission beyond the horizon is quite common due to the unusual propagation characteristics and a phenomonen known as 'ground wave'. This effect is virtually non-existent at 27MHz and above.

Contrary to popular belief, increasing your transmitted power from 5 watts to 500 watts will not enable you to achieve 100 times the distance. In fact if you are communicating over a clear path to the horizon, you are very unlikely to achieve

This Elite Line amplifier produces between 350 and 400 Watts PEP between 1.8MHz and 30 MHz. It requires a power supply capable of 35 amps to operate efficiently.



50 per cent increase in range...more likely about 10 per cent is realistic. What you are really achieving is a 20dB increase in your radiated field to the horizon where the attenuation beyond this 'terminator' is so high that even 500,000 watts will be lost quickly to outer space.

Add some trees and suburbia to the scenario and an artificial horizon is produced which will greatly modify the radiation pattern of the transmission according to the composition and density of the objects that obscure the radiated field. As a general rule, dense heavy masses tend to severely hamper the transmitted field while light materials and fabrics affect the propagation to a lesser degree and metals will often reflect a signal or absorb and re-radiate a good deal of the energy. So in the real world of RF propagation the signals are subject to millions of possible scenarios between transmitter and receiver. And this is the environment where extra power can be of considerable benefit.

For example, the direct path between two stations may be obscured by an industrial suburb or a mountain with only a tiny amount of energy arriving at the receiving antenna by way of secondary paths caused by reflections off other objects which manage to channel some of the signal around the interfering perimeters. In this situation extra power will most likely provide a considerable improvement in the average signal strength at the receiver. If one station is mobile the extra power can often provide constant readable communications where a normal power signal would have been lost for lengthy periods.

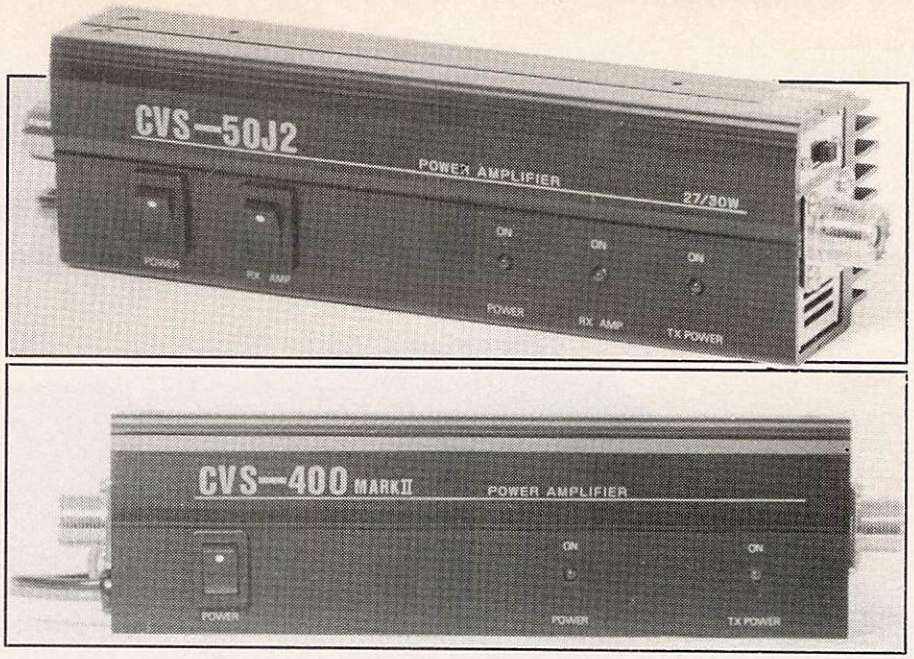
The real horizon however, stands as a solemn reminder that power is not everything and its effect on the signal is final and total unless some other factor is introduced.

SKIPPING AROUND THE WORLD

There is absolutely no doubt whatsoever that when the 'skip' is in, high power comes into a world of its own.

We have covered 'skip' in the past but for newcomers to the scene here's a brief explanation of the skip phenomenon.

In the upper atmosphere - at an altitude of between about 80km to 300km - there exists a layer known as the ionosphere which consists of a proliferation of ionised gas atoms generated by solar radiation which constantly bombards the planet during the daylight hours. The density and thickness of the ionospheric layer will vary from hour to hour and day to day according to the intensity of the radiation from the sun. It is generally acknowledged that there are three or more distinct layers in the ionosphere which during the day are named the E, F1 and F2 layers, or more accurately zones. The F1 and F2 zones



TOP: The CVS 50JS is a low band linear amplifier designed for use on the 28MHz amateur band. It is rated at 30 watts output for AM/FM/SSB with a maximum current drain of 6 amps at 13.8 volts DC. A receiver pre-amplifier gives a useful lift to weak signals.
BELOW: The CVS 400MkII produces 20 watts RMS output for about 5 watts drive at 470MHz with a maximum drain of about 3 amps from a 13.8 volts DC power supply.

tend to combine into a single zone named the D layer.

These ionospheric layers are largely responsible for the phenomenon known as skip. As the radio signals travel across the horizon on their way to the stars, they must travel through the ionosphere which surrounds the earth as an invisible cloud. If the layer of ions and free electrons is sufficiently dense, the path of the radio signal is bent in much the same way that light travelling through water or a prism can have its path changed. This effect is known as refraction but is commonly termed as reflection for the sake of convenience. The radiation is in fact bent back towards the earth by the ionised layer producing the effect called skip. The height above the earth's surface that the refraction takes place will dictate the skip distance which, as its name implies, is the distance between the transmitting station and the reappearance of the signal back on earth. The gap between the two points is known as the skip zone in which the specific signal is not detectable.

If the ionosphere is sufficiently dense and the angle of the reflected signal is not too steep then there may be sufficient energy left in the signal for more than one hop to take place. This effect is known as multi-hop skip and relies on there being sufficient reflection/refraction from the Earth's surface to relaunch the signal skyward again.

WHO GETS THE COPIES?

Almost everyone who regularly operates a sideband rig will be familiar with the skip signals that suddenly 'leap-out' of the 'dog-pile' with a signal strength noticeably greater than the rest. You call and call apparently into a void because no matter how hard you try the DX station doesn't know you even exist.

The most obvious reason that you are being ignored by the DX station is because you can't be heard at the other end through the noise of many stations all calling at the same time. You already know that if you can hear the DX stations then you should be able to get back to them.

This then is the legendary situation where the station with the strongest signal penetrates the pile-up and becomes dominant over the also-rans. Sometimes there is just no substitute for capital outlay and the station with the beam and the high power amplifier wins the race every time. There is no substitute for power, especially when multi-hop skip is involved and International DX usually involves the multi-hop effect at frequencies around 30MHz.

Sometimes a station will have a superior geographic position with regard to a particularly dense 'cloud' (not the water vapor clouds in the sky as many think) of ionisation which will propagate a signal over vast distances suffering very little attenuation.

At other times, that ultra-strong signal you hear is probably an operator running an illegal linear amplifier **BUT BE WARNED that they are expensive, very illegal and really not worth the effort or risk for a cber.**

AR2500 DYNAMIC SCANNING RECEIVER

CAT # C5010
Recommended Retail

$999

1984 Channels
500KHz to 1500 MHz

STANDARD FEATURES

- Continuous coverage
- AM, FM, wide band FM, & BFO for SSB, CW.
- 62 Scan Banks.
- 16 Search Banks.
- RS232 port built in.
- Includes AC/DC pwr crd. Antenna, Mntng Brckt.
- One Year Limited Warranty.

The AR2500 is a compact, synthesised receiver offering continuous access to frequencies between 500KHz and 1500MHz. In addition, it allows computer control via an in-built RS 232C port located on the rear panel allowing asynchronous communications with a personal computer for spectrum display and database compilation. Massive channel capacity and wide frequency coverage coupled with multi-mode reception make this the most dynamic scanner on today's market.

High speed microprocessor control and triple conversion receiver techniques make this unit suitable for the casual listener or professional monitor. Dimensionally small, this receiver offers size and construction ideal for vehicle mounting with the added benefit of HF coverage.

SPECIFICATIONS

Coverage:	500KHz-1500MHz
Sensitivity:	.33uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	38 ch/sec. scan. 38 ch/sec. search
IF:	750.00, 45.0275, 5.5MHz, 455KHz
Increments:	5,12,5,25 HKz
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 300mA
Antenna:	BNC
Display:	LCD, backlighted.
Dimensions:	5.5H x 14.5W x 16.25D cm

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WOOLLAHRA
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BRISBANE 12 Stratton Street,
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Ph: (07) 252 1420 Fax: (07) 854 1453

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The masked avenger (no really) talks about...

BOGEYS and COMMERCIAL OPERATORS ON SYDNEY'S Ch 5/35 REPEATER

As many Sydneysiders with UHF CB's now realise there is a 5/35 repeater in Sydney.

When first switched on a Sunday evening several weeks ago there was a flock of the usual Sydney wankers jumping on it, foul mouthing the CREST operators and generally making a nuisance of themselves.

Now that the repeater has been running for several weeks all the myths about it being a pirate repeater, funded by the State Government, CREST funded, and a heap of other stories by supposedly "people in the know" that really don't know, the biggest problem facing the CREST monitors is that of commercial CB users.

CHANNEL 5 IS NOT COMMERCIAL

If any of these commercial users are licensed they should know that Ch 5 and 35 are not supposed to be used. The majority of commercials that were on Ch 35 when asked to move, did so without fuss. Now there is a problem with some commercials that are running "sub-tone".

These commercials have had their equipment supplied by commercial companies such as Motorola and Hayden Spike, and are fitted with "sub-tone" encode and decode for quiet and supposedly interference free operation.

FIRST CAME FORD

Many users of Sydney will remember when Ford had a phone patch operating at Homebush on about 10 different channels with DTMF and "sub-tone" (250.3 Hz). This system was installed by Haden Spike and was rendered useless allot of the time because it didn't take some operators long to get "pissed off" with the phone patch cutting over their conversation. So it was jammed and "rat-bagged" on until they finally got the message and from what I hear have moved off to greener pastures on the commercial band where their phone patch won't be jamming out people unannounced.

THEN THE STATE SPORTS CENTRE

Then came the State Sports Center at Homebush Bay, Motorola, for some unbelievable reason programmed their units for Ch 37. Bad move Motorola!

These people coped hours of abuse from some operators not realising that they had "sub-tone" on 192.8Hz and couldn't hear what they were being told to do.

ALSO DARLING HARBOUR

The construction of Darling Harbour provided fun and games with some operators and commercial users of repeaters telling the "dopey" builders to "F... off!"

AND GEORGE STREET

Now that CH 5 is going in Sydney there are some builders in town, George St to be more precise, that are using commercial hand helds with "sub-tone" encode/decode that are ton CH35 interfering with the 5/35 repeater.

I think the CREST operators have given up on telling them "This is the Government allocated emergency frequency, you are interfering with the 5/35 emergency repeater. Would you please change channel. Sydney/CREST xxx, clear and listening.

CREST and SUB TONE

Obviously some of the CREST operators are not aware of "sub-tone" operation and how it works. This is nothing against the operators who do a great job monitoring the frequency for people needing help. Another group of people using CH35 are the security staff (or as I call them "Biff Head Bouncers") at the Great Northern Hotel at Chatswood.

Other groups using it include a trucking company using 173.8Hz "sub-tone", security company using 107.2Hz, another commercial user on 141.3Hz and a first grade rugby league team using 162.2Hz.

RUGBY LEAGUE IS DEFINITELY ADULTS ONLY

Recently on a Tuesday night this team played and to quote a couple of things that were passed between apparent team officials...with expletives largely deleted...

** "You tell Cogger that was piss week'n'soft"*

** "Langmac is trying to put plays on. Tell him....."*

** "He'll get us for off side in a minute. Give him a warning."*

** "All these c..... Now all this s..t comes from Langmac f... a....g around being clever and trying to be a f..... clever c... and is loosing possession on the half way line. For Christ f..... sake".*

** "You had better watch the f..... penalties here. The chip kicks and the penalties.*

Reply..."I'm telling them now mate."

** "Billy Harrigan loves grandstand finishes.*

Reply..."You're not f..... wrong there."

** "Listen, Tony Rambly is a f..... ninkingpoop the way he picked that f..... ball up then. F... him off out of dummy half."*

** "I want the line, the line. And take the f..... c..., I shouldn't have to tell you that. Don't youse know anything about bloody football."*

** "Get Thomas off quickly."*

** "I wanted Thomas off and Flannigan on. You have got to get that done ....it's done.*

Reply..."Yeah, its done mate."

WILL DoTaC TAKE ACTION ?

Now, the $10,000 question is, or should it be the $10,000 fine, which football club was this? We have our own ideas, can you guess it ? Will DoTaC guess it ? Will DoTaC do anything about it...?

When will these commercials wake up to themselves and stop using CB radio? Even more to the point when will they move to the commercial bands and stop interfering with services such as the 5/35 repeater.

And again...will DoTaC do anything about it?

If any one knows of similar instances, I'd be interested in hearing from them.

Now for the simple reason that our contributor does not wish to receive a damaged head from either 'Biff Head Bouncers' or large rugby league type gentlefolk he remains nameless, however, he can be reached via...

P.O. Box 53,
Turramurra, NSW 2074.

hf utilities

with Bob Bell

WHERE TO LISTEN and WHAT'S BEING HEARD

The Mojo Mystery

Isn't it amazing how you can search and search, sometimes over an interminable period, for positive leads and clues while trying to solve a very puzzling monitoring mystery?

I have been personally going through all this over the past 18 months, attempting a positive ID of an aircraft from the US Military Forces using the unusual callsign of "Mojo". When I first heard the aircraft it was late one evening while VHF-bandscanning, and the radio locked up on the Richmond Approach frequency of 119.7 MHz. The crew had American accents, and that unmistakable USAF-style radio telephone delivery: "Ahh... Richmond Approach, this is Mojo two-seven with you sir, on climb to flight level three-three-zero". Mojo! What the hell was Mojo?

As it continued its travels, changing to Sydney Control frequency 128.6 to begin its oceanic journey to the east, I quickly thumbed through all my US military reference sources, all with negative result! Even though it was fairly late, my hand grabbed the telephone handset, and I began to ring everybody I knew in the hobby who may have been able to shed some light on the mysterious "Mojo". First call was to my old friend Russell Bryant... yep, "Tackleberry" would know! He didn't! My next call was to Dean McFarlane in South Australia, then Joe Gatt, Steve Reakes, Eric Allen... and then I gave up, after someone's wife reminded me how late it was! "Mojo 27" was now on 5643 kHz HF working Sydney Radio, and as such becomes of interest to readers of HF UTILITIES.

More Phone Calls...

Twenty minutes later I was dialling again (a true DX detective doesn't give up easy!). I tried Richmond Air base and Sydney ATC. I figured one of my many friends at ATC would be able to read it to me right off the controllers' flight strips. Unfortunately on this one night no one I knew was on duty, and the guy I wound up getting at the Area Control Centre was the worst possible person you could have talked to... " You shouldn't be listening anyway, should you? I'm sure it's illegal!"

That was all I needed. A real bonehead when I required a human encyclopaedia of-the-aeronautical-kind.

More telephone enquiries the next day with Richmond RAAF personnel also failed to yield any valuable information. I was passed from pillar to post with "Sorry, those records aren't on computer yet" and "the guys who were in the tower are on a day off right now". Then I tried soliciting a response through my "On The Airbands" column in Australian Aviation magazine. Nothing. Nil. Zilch. Finally, while visiting America last year (over 12 months since my first logging of Mojo) I enquired of the creme-de-la-creme of the military and aeronautical monitoring fraternity, only to once again find no joy.

But here's the happy ending. Just a few short Sunday mornings ago, while I was monitoring the 261.450 MHz downlink from the US Navy Pacific FleetsatCom, I caught two US servicemen on a phone-patch discussing a C-12 aircraft which had earlier returned to base with a condensation problem in its GNS Omega navigation unit. The plane's callsign - you guessed it - Mojo! "Mojo niner-seven" this time around. I was both stunned and elated. After all that time and effort I'd been handed my answer on a plate. Or should I say, a dish... a satellite dish!

Mojo Uncovered

Frankly, prior to this intercept I believed that the earlier Mojo (27) was a giant Lockheed C5-A Galaxy Transport. Instead, it proves to be a Beech C-12.

For "air-head" readers, the C-12 is a twin-engined turboprop aircraft capable of up to 2,572 miles range. Powered by a pair of Pratt & Whitney-Canada 750 shp engines, the C-12 can reach 320 miles per hour and climb to Flight Level 350 and even higher with light loads.

The aircraft was first built in 1972 and is today operated by around seven military organisations around the world, including the US Air Force. In passenger configuration, it carries two pilots and 13 passengers, and in recce configuration two pilots and three observer/operators up the back.

Further enquiries with a mole I have within the RAAF reveals that the C-12 light transport squadron, which uses the "Mojo" callsign, operates out of Clark Air Force Base in the Philippines, and that they occasionally get down to Darwin these days. Thanks to Joe Gatt of Hassallgrove NSW for the assistance with specifications relating to the C-12.

I guess the moral of this story is that everything comes to he who waits! If you monitor any Mojo aircraft on HF, please let me know.

Shuttle Frequencies

Steve Gilbert of Weetangera (ACT) recently sent me some fascinating information regarding the SAREX (US Shuttle Amateur Radio Experiment), but as most of it is VHF/UHF I have passed this on to SCAN's Russell Bryant.

For HF listeners, though, Steve suggests monitoring the daily bulletins from US ham station W1AW (see QST magazine for schedules), or the AmSat International Satellite Net on Tuesdays between 0130-0300z on 3040 kHz and Sundays between 1800-2100z on 14282 kHz. Ken Glasson from Ipswich (Qld) also suggests tuning to 14282 at 2200z on Sundays, when New Zealand ham operator ZL1WN presents a compilation of government, commercial and amateur satellite news. It's usually a thirty-minute presentation, and sources close to Ken believe that the Kiwi's information originates from AmSat.

My appeal last issue for more RTTY and CW loggings appears to have fallen on deaf monitoring ears. I can only assume that RTTY and CW are much less popular among Australian Awls than I imagined they would be and hardly anyone in Australia has bought the equipment necessary to decode these modes. Whatever the reason, I am personally very keen to see these two modes live and live long. If you are into RTTY or CW, share your monitoring fare with us.

One letter that did arrive was from a new contributor to these pages. Our reader comes from Port Macquarie (NSW) and includes a request for anonimity.

The writer suggests a pen-name of "Port" might be used to tag the loggings. Done - welcome aboard "Port", we'll look forward to your loggings in the months ahead.

It's been a great twelve months editing HF Utilities, sharing frequencies, loggings and "classic catches" with you. However at this point in time I'll be handing over the reins of HF Utilities to Richard Gary and moving into feature articles from the world of HF, and maybe some VHF/UHF too. And there are some great articles on the drawing board, so stay tuned!

The new HF Utilities will appear in CBA's January/February edition, so send those loggings to **Richard Jary c/- PO Box E160, St James, NSW 2000.**

HF Utility Logsheet

- ***2012 1625z USB*** *UNKNOWN FISHING BOATS, Talk of two boats meeting up at 1100 local. Our correspondent "Henry" says "if you want to learn to swear, then listen to this rough lot!" ("Henry", NSW)*
- ***2201 1755z USB*** *SYDNEY RADIO VIS, Tfc list for vessels including Rick O'Shay, Oceanic Explorer, More Lightning, Lady Wakehurst, and Warship HMAS Moresby ("Sunset", NSW)*
- ***2201 1800z USB*** *TOWNSVILLE RADIO MIT, With maritime weather for Gulf of Carpentaria and Queensland Coast ("Sunset", NSW)*
- ***3425 1425z USB*** *NAZI RADIO (AERO) FIJI, Wkg American 97, cleared to Flight level 350. DC-10 aircraft ("Henry", NSW)*
- ***4081 1809z USB*** *DARWIN CONTROL (RAN), "Geelong Alpha-2" coded message passed to Darwin. Darwin told "Geelong Alpha-2" to standby. Launceston also monitored; told to call Darwin Control again at 2130z ("Sunset", NSW)*
- ***4428 0917z USB*** *PERTH RADIO VIP, Tfc on hand for Fairstar*

and the Achille Lauro ("Gatward", WA)

- ***4722 1655z USB*** *R.A.F. VOLMET WEST DRAYTON, Detailed aviation weather for British and European cities ("Clandestine Militarian", WA)*

- ***5696 0850z USB*** *RESCUE 1493, With posn. report to ComSta. Honolulu. Possibly a Hercules or helicopter (Don Rogers, QLD)*

- ***6556 1825z USB*** *LAHORE RADIO (AERO) INDIA, Wkg MAC 20364, a C-141B Starlifter, cruising Flight Level 290, with posn. report (Ron Bromley, NSW)*

- ***6679 1645z USB*** *HONG KONG VOLMET, With weather for Taipei, Macao, Manila and Hong Kong terminals (Brian Kroll, VIC)*

- ***6720 1153z USB*** *US NAVY CHARLIE-4-YANKEE Wkg Echo-0-Foxtrot, advising that Kilo-0-Mike has tfc. for his station. Then relayed series of coded messages. Our correspondent Ken has monitored the frequency since, and heard similar traffic, with different operator id's being used. Good maiden intercept for the column Ken! (Ken Glasson, QLD)*

- ***6997 0500z USB*** *OV (Oh Vee) LAND MOBILE, Bourke to Beagle Bash car rally, with RAAF involved. Also talk of using 3 MHz frequency after 6pm local. Callsign spoken as "Oh Vee", not in phonetics (Rob Williams, NSW)*

- ***8141 0646z USB*** *UNITED 816 (AERO), Wkg on yet another Sydney Skycoms frequency, calling United Operations Sydney. Advising Maintenance Watch that aft galley heating had "popped" and there were 180 cold meals to be heated. Engineer on the line suggested re-setting circuit breakers, one at a time. Result not known (Dean McFarlane, SA)*

- ***8163 0355z USB*** *NOWRA CONTROL (RAN.), Wkg HMAS Fremantle. Warship was reporting underwater damage, which had been photographed for further assessment.*
- *Stated "vibrations can be felt....but operations will continue on as planned" (Dean McFarlane, SA)*

- ***8163 0400z USB*** *NOWRA CONTROL (RAN.), Wkg Warship HMAS Brolga with radio check. Brolga was docking in Sydney early that evening. Then Nowra Control worked Salvatore 5, also with radio check. No other tfc. to that station (Dean McFarlane, SA)*

- ***8163 0842z USB*** *CAIRNS CONTROL (RAN.), Wkg Warship HMAS Paluma. Warning them to be on the lookout for overdue yacht, IBIS, departed Townsville. Destination was at time of going missing "Brisbane". HMAS Paluma stated "so far, no sighting" (Dean McFarlane, SA)*

- ***8163 1300z USB*** *CAIRNS CONTROL (RAN.), To HMAS Betano, passing codes, then Nowra Control to HMAS Bankstown, in response to ship's call. Ship station requested transport for students to be organised by an Able Seaman (named).*
  Then Exmouth Control came on frequency with radio check. Loud and clear (Dean McFarlane, SA)

- ***8198 0719z USB*** *ACHILLE LAURO (MARITIME) Attempting to contact Sydney on Radphone, but unsuccessful (Dean McFarlane, SA)*

- ***8864 0952z USB*** *MILITARY UNKNOWN, Scrambled speech, male o/m, ended abruptly 0954z, no other clues (Bob Bell, NSW)*

- ***8867 0430z USB*** *AIRVAN ??? (AERO), Flight number unfortunately missed, aircraft VH-TBN leased by Air Vanuatu, reported hearing survival beacon on 121.5 MHz at position 32 South, 172 34.2 East. No other details (Bob Evans, QLD)*

- ***8903 1200z USB*** *TOKYO RADIO (AERO), Wkg All Nippon 601, advising the aircraft "Call Manila on 8903 primary, secondary 13300" ("Gatward", WA)*

- ***8942 1301z USB*** *AIR FRANCE 175 (AERO), Wkg Hong Kong. Allocated 8942 and 5655 kHz ("Gatward", WA)*

- ***8964 1207z USB*** *MAC 00467 (AERO), Wkg Hickam AFB in Hawaiian Islands on Oahu. Advising that "No. 2 fuel flow was fluctuating 500 to 1,000 pounds 'CFD'. It was disconnected for oil fluctuations at posn. 31 01 N, 141 39.0 W, with aircraft at Flight Level 350. No pax on board, but two cargo pallets. Hickam advised Starlifter crew of MAC 00467 "no parking spot at the moment", and then said "call on uhf when in range of Hickam. Temperature at the field is currently two-one degrees". Nice intercept Dean! (Dean McFarlane, SA)*

- ***8964 1210z USB*** *MAC 41062 (AERO), Wkg Hickam, requesting medical nurse at the base for patient on board, and also required US Customs Service to be in attendance on the aircraft's arrival. There are a few monitors chasing the Mac-Birds! (Peter Cardwell, NSW)*

- ***8972 0852z USB*** *BLUESTAR, Wkg Fine Art 1 for radio check. Who are these guys? If you know, drop us a line (Dean McFarlane, SA)*

- ***8984 0705z USB*** *COMSTA SAN FRANCISCO (U.S. COASTGUARD), Wkg unknown stations, providing grid positions about to be flown by Rescue 1707, with a Search and Rescue operation apparently in progress. No clue to the aircraft type being deployed in the mission as Rescue 1707 ("Henry", NSW)*

- ***11233 0001z USB*** *TRENTON MILITARY (AERO), Wkg Navy Tango Mike 378, who requested radio check on frequencies 11214, 9006, 13257, 6705, and 6746 kHz ("Gatward", WA)*

- ***11234 2219z USB*** *R.A.F. CYPRUS (AERO), Wkg Ausy 172, a Boeing 707, overflying the Eastern Mediterranean region ("Gatward", WA)*

- ***11255 1300z USB*** *VSD014 (MILITARY), US Navy vessel, wkf unknown station, words "Go green" (scramble) copied, then scrambled speech monitored ("Gatward", WA)*

- ***1138 41042z USB*** *HOSER 28 (AERO), a KC-135 aerial refuelling tanker from the USAF operating from Clark AFB in the Philippines at position 34 North, and 180 degrees at 1040z. Bob Evans followed the progress of this interesting aircraft until 1237, when the aircraft reported in at 160 West.*
  Told then to "contact Honolulu on 6655". Unfortunately Bob forgot to include the station worked initially.
  Unless I am very much mistaken, Tokyo has no 11384 fitted, and the initial position of this aircraft places it well to the east of the Japanese mainland.
  Possibly an ARINC station (Bob Evans, QLD)

- ***11396 1053z USB*** *BALI RADIO (AERO), Wkg Ausy 148 at Flight Level 410, requesting Flight Level 430. Boeing 707 aircraft (Bob Evans, QLD)*

- ***11396 1224z USB*** *NEW YORK RADIO (AERO), Wkg TWA 25 with position report (Bob Evans, QLD)*

- ***12996 2200z CW*** *IAR 76/33 ROME PUBLIC TELEPHONE RADIO ITALY, News in CW through ANSA Italian News Agency, in Italian language ("Port", NSW)*

- ***13261 0025z USB*** *NAVY GOLF YANKEE 815, Wkg Sydney Radio. Posn. Rockhampton, bound Cunnamulla, e.t.a. Cunnamulla 0324z (Bob Evans, QLD)*

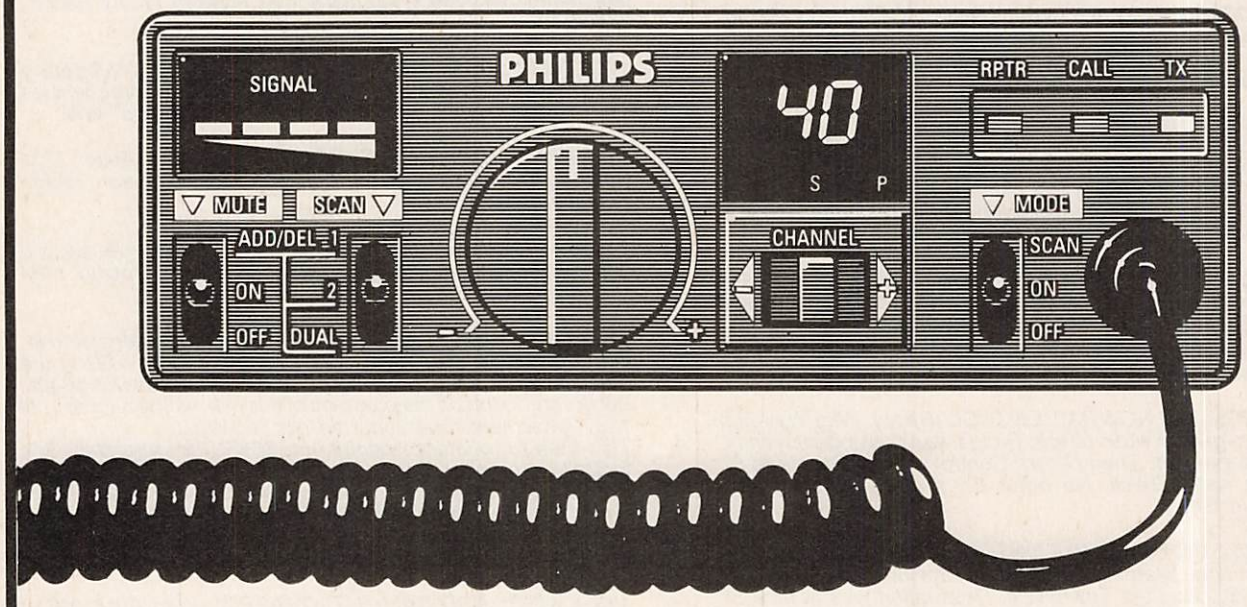
- ***14282 2200z USB*** *ZL1WN (AMATEUR), With satellite information broadcast using material gleaned from AmSat organisation (Ken Glasson, QLD)*

- ***17468 0600z RTTY*** *HGO24 BUDAPEST HUNGARY, With broadcast apparently beamed to Far East. 50/N in English language ("Port", NSW)*

- ***17904 0327z USB*** *JAPAN AIR "SYSTEM" 8504 (AERO), requiring phone patch to company. Given frequency 13348 for that purpose (Bob Evans, QLD)*

- ***20185 1530z USB*** *HOUSTON CONTROL (SPACE), Wkg Space Shuttle Atlantis, takeoff and orbit operations all copied, excellent quality ("Gatward", WA)*

Philips announces the new FM650SD UHF CB Radio.



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PHOTOSYNTHESIS

Chris Edmondson, editor of Amateur Radio Action, writes about...

Antenna tuning units

(and asks,"do you need one?")

So you have it made when it comes to putting up the best CB antenna system, do you? What about that new little beauty out in the back yard, eh? Your SWR bridge indicates a perfect '1:1' match when you check its reading on your favorite channel. Not just that but, judging by the reports you are getting - especially those from far afield - it looks as if that shiny new antenna is just what the doctor ordered!

There do seem to be a couple of nagging little doubts though, ones which you would possibly rather forget about. The SWR reading on the new antenna does seem to rise somewhat as you increase the channel number (making your transmissions go up in frequency). There is also the other little point which make you wonder a bit, too. Would that vertical antenna which now resides on the floor in the shed and which wouldn't 'SWR in' properly have worked if you had tried it with an **antenna tuner**? Maybe you wouldn't have needed the expensive new replacement antenna if it had!

What, you may ask, is an antenna tuner, and just how does one work? Is it true that a proverbial piece of wet string can be converted to a super antenna system merely by passing your signals thorough an antenna tuner on the way to the outside world first?

Resonance and SWR

Possibly the most simple antenna system to build and to understand is the humble **dipole**. It is made from a piece of wire cut to a length equal to half of the wavelength at the desired frequency and then fed in the center with coaxial cable. If you know the frequency in MHz that you wish to operate on (let's take 27.3 MHz as an example), then the required length of wire is 150/27.3 = 5.50 metres - which, you may note, is exactly one half of 11 metres! The resulting antenna is fed with a suitable length of coaxial cable, the other end of which is connected to your set. Theoretically, the final combination should radiate energy on 27.3 MHz something like the diagram shown in **Figure 1**.

Okay, so far so good. What you may not know is that the actual **impedance** of your dipole (that's its number of ohms, which most people think is 50) is not likely to be 50 at all unless there's something dreadfully wrong with it. In fact, if you connected the top end of the coaxial cable to a **75 ohm** resistor instead of our perfectly-tuned dipole, then your SWR reading would seem just the same - perfect. In either situation, we say that the antenna system is purely **resistive**.

Let's go one step further. If your 5.50 metre long 27.3 MHz dipole antenna were to be used at 27.0 MHz instead, its length would have to be stretched out to 150/27.0 = 5.60 metres, which is a whole 100 mm - about four inches - longer! It's easy to make an antenna shorter. Any imbecile can grab a pair of shiny bolt cutters and completely ruin an antenna. But how do you makethe silly thing longer? And a harder question: what do you do if you want your antenna to work properly at **both** places?

Here's the bottom line: in the real world, you can tune a dipole antenna to be **resonant** at only one frequency. Although

"the SWR looks good at 1:1, the reports you're receiving sound excellent. In fact everything sounds spot-on, but is it ?"

the frequency move was only 300 kHz, it represented a change of about 2 per cent - and this error is sufficient to cause part of the **coaxial cable itself** to radiate radio frequency (RF) energy as you transmit on 27.0 MHz.

This 'mis-match' can lead to several problems:

* The first is that the cable will no longer 'see' a purely resistive termination and thus RF energy will be radiated by the coax cable. This unwanted radiation will, in turn, will be reflected back down along the entire length of the cable, eventually returning to the transmitting end, where it will cause a measurable SWR.

* The second consequence is that the transmitter will be unable to disgorge its hard-earned RF energy into the cable properly, an unfortunate situation which can lead to overheating of the radio's power transistor amplifying stages and even to a possible breakdown, depending on how bad things are. Put simply, the transmitter should see that coax connection on its back panel as a purely resistive load, just as if there were a resistor connected there instead of an antenna.

* The third consequence is that the signals you are **receiving** must suffer the same hardships as those you are **transmitting** if there is a mismatch. If their wavelength is incorrect compared to that of the antenna, neither the cable nor the tuning of the receiver input stages of the receiver will be correct. The result of all of this is a 'desensitising' (making less sensitive to weak signals - **any** signals) of the transceiver in the receive mode, and a lowering of your effective range.

Figure 2 shows the imbalance of the radiated RF pattern arising from a mismatch of the antenna system.

Let's now see if we can distinguish between **antenna resonance** and **SWR** at the radio end of the antenna. The word 'resonance' in everyday language is probably best understood by the 'opera singer breaks wine glass' phenomenon. If the correct pitch for a particular glass is sung right by it, the glass will respond with its own 'sympathetic vibrations' and may even shatter (which is a little unnerving, I am told!).

An antenna **'cut'** or tuned internally for the correct frequency is rather like that wine glass, although it should be a bit harder to shatter... Any RF energy you send it is precisely matched by the

(continued over page...)

resonance of the antenna at the chosen frequency and maximum radiating efficiency from it is possible. On the other hand, if the antenna 'presents a perfect 72 ohm resistive load' and you use 50 ohm cable, a mismatch occurs and SWR arises but for a different reason.

The function of an antenna tuner is this: one end of the tuner connects to an antenna system and the other end is connected via a piece of 50 ohm cable to your rig. When the antenna tuner is 'tweaked up' properly, the rig sees a purely resistive 50 ohm load, almost in spite of what is connected to it - just as if it were connected to a precisely-tuned antenna with equally precisely-matching coax cable running down into the set. All this can happen even if the antenna is really dreadful!

Figure 3 shows a typical antenna tuner installation.

There are a couple of things to note here. If the antenna system uses coaxial cable, then both ends of the antenna tuner will use 'unbalanced connectors', meaning coax cable. On the other hand, some antenna tuners allow the antenna to be a single piece of random wire so long as the cabinet of the antenna tuner is connected to an outside ground (typically a piece of copper pipe stuck well into the ground). Depending on the quality of the tuner, this completely random length of wire may work superbly.

A third sort of antenna tuner allows 'twin lead' or 'balanced lead' to be connected to it effectively converting it to coaxial output. Twin lead such as ribbon cable as used in a television system or even 'figure eight' power flex has been employed with good success at high frequencies - when an antenna tuner is employed. The expression 'good success' refers to achieving a low SWR, cool-running transistor amplifier stages and an increased operational range.

So why not use an antenna tuner on the CB band all of the time? If indeed they **are** such magical devices, surely we should all use them! Well, hold on a minute, there are a few little pieces of fine print to cope with first! While antenna tuners will match a wide range of antennas, they won't match them all. Secondly, an antenna tuner may need an 'earth' system connected to it, and third, antenna tuners often need to be tuned whenever you change frequency which can be fiddly and annoying.

What does an antenna tuner look like?

It should be noted that an antenna tuner **must** be used in conjunction with an SWR bridge. In an emergency, I suppose it is possible to get near the mark by tuning the various controls for maximum receiver noise, but that is really relying on good luck more than anything else.

If the antenna tuner is used exclusively for CB communications then, once it is initially tuned up and the position of various controls noted down somewhere, only minor alterations will be needed as time goes by. On the other hand, if all kinds of different antennas are to be used - especially those using fiddly little bits of wire, random lengths of tubing or the like - you can expect to be working those controls a fair bit.

If you want to use that new antenna at other frequencies - say for general short wave reception of for monitoring the amateur bands - then a further degree of complexity can be expected.

The typical antenna tuner has three variables and thus three controls. They are:

* the input or transmitter-end tuning,
* the coil whose length must be selected from the front panel, and
* an output or antenna-end tuning.

On an antenna tuner especially designed for CB use, the 'coil' may be internally set to a fixed length thus eliminating one of the controls you would otherwise have to wrestle with.

If you are using the most complex and versatile sort of antenna tuner, you can expect that there will be three controls. Typically, they are labelled 'transmitter', 'antenna' and inductor' (ie the coil). A more expensive unit may have an SWR bridge built into it and will therefore have a forward/reverse switch and a sensitivity control.

The back panel will sport various things, almost certainly including a coaxial socket for a connection of the thing to your transceiver. That means you will need to purchase a suitable length of coax with a plug at either end - or maybe two - and an SWR bridge becomes part of the shopping list. By the way, it is most unlikely that any source of voltage (mains, 12 volts, battery or what have you) will be needed.

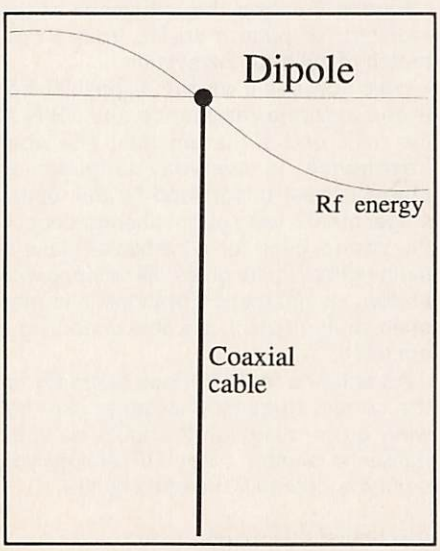
There will almost certainly be a coaxial socket for the lead to your antenna, a separate pair of 'binding posts' if your antenna is wire and uses balanced leads (don't bother looking if you're not sure, though - 99 per cent of commercially-made CB antenna products are designed to work with a 50 ohm unbalanced load), a single binding post for an unbalanced single wire antenna and a lug for connection to an earth wire. Less complex tuners won't have all of those things but will have some selection taken from that list.

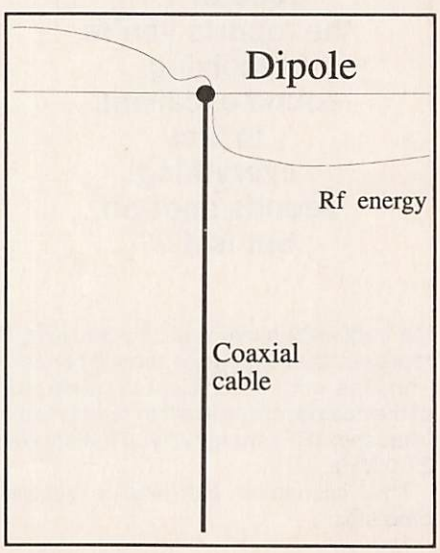
There are some tuners around the marketplace which specialise in simplicity for single band (ie CB) use. They may be marked with the words 'inductance' and 'capacitance' only. Others may simplify things in other ways and may also present you with just two controls rather than three. It is the three control system which is the norm, however.

Operating an antenna tuner

Once you have selected an antenna to try on you system, be it unbalanced, balanced or a random length of wire, connect the thing to your transceiver and get ready to operate. Now, the trick is to tune up the whole system without (a) blowing up your transmitter or (b) annoying every other user of the CB frequencies with long un-modulated transmissions. Therein lies the art of antenna tuner tuning!

Figure one (left): Theoretically, the final combination should radiate energy on 27.3MHz something like the diagram.
Figure two (right): This figure shows the imbalance of the radiated RF pattern arising from a mismatch of the antenna system.





Problem (b) has one resolution - some really classy antenna tuners include a 'dummy load'. That is, a 50 ohm resistor which you can switch in instead of the coaxial line to the antenna. This allows you to do some preliminary tuning without actually connecting the antenna and annoying others. Most don't.

Here is how I operate one of these beasts for the first time. (I make notes of the knob positions for when I finish and therefore the initial effort is usually the worst). The inductance control is like a band or wavelength switch and should be tried first of all. Once you have it right, it is really only the capacitors (antenna and transmitter controls) that do the work. I tune the inductance control **on receive** for maximum noise first, then I tune the other two for a better noise peak. Only then are you are ready to do the fine tuning on transmit with the SWR bridge in circuit. This procedure results with far less chance of any damage (which takes **minutes** of continuous transmission on the typical set in case you are worried!).

The SWR bridge **must be** connected between the transceiver and the antenna tuner if you are using a separate SWR bridge, by the way. Tuning an antenna for lowest SWR takes longer to describe in words than it actually takes to do. I note this - it is a very smooth and satisfying procedure when you master the technique.

Try a particular inductance and then set the antenna control to one extreme. Push that transmit key on your set (or microphone) and fully rotate the third ('transmitter') control looking for a dip in the SWR. Let go of the button and move the antenna control a quarter of a turn. Keep repeating the procedure and note the position for the best SWR you are able to achieve.

Now turn the inductor control and repeat the whole performance. This can all take quite a while (ie up to a minute!) so watch that interference and transmission time warning I gave!

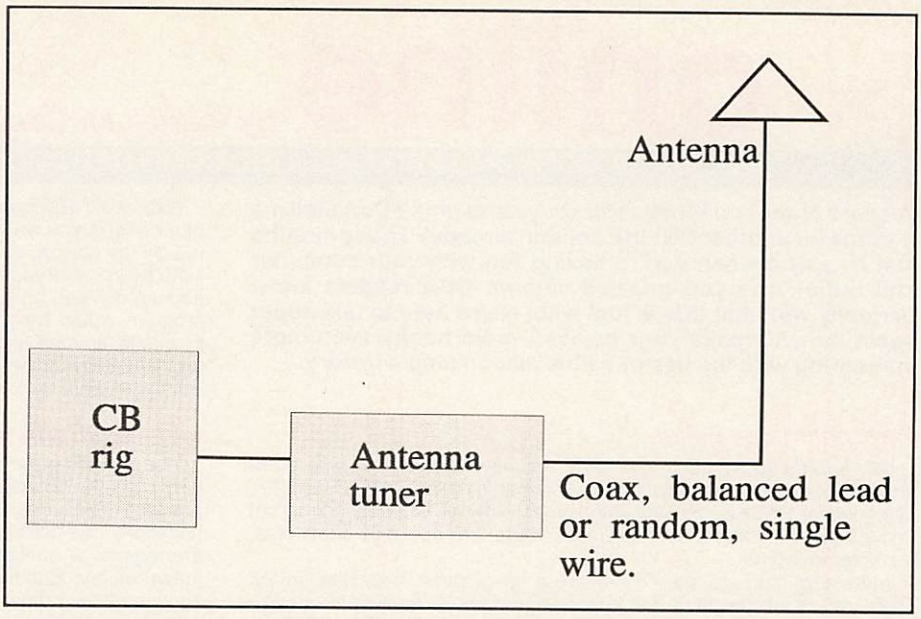


Figure three (above): The antenna tuner is fitted in-line between the transceiver and antenna regardless of whether the line to the antenna is coaxial cable, balanced or random lead or single wire.

When you finally find the best positions for all three controls, note the settings carefully for next time. I have tried using little pieces of cardboard to slide behind the controls to record and remind me of the best settings for next time. I have kept one set of cardboards for each antenna!

SUMMARY

No antenna tuner can fully fix an antenna which is not resonant. On the other hand, an antenna tuner is able to extract maximum performance from an antenna which is possibly (a) not resonant, (b) fed with incorrect cable, (c) a random wire (c) uses balanced lead yet the transceiver wants unbalanced coax or (d) is to be used over a very wide range of frequencies.

I recommend a resonant antenna with the correct coax cable running straight to a transceiver - but an 'incorrect' or difficult-to-feed antenna with an antenna tuner is a very good second best. A random piece of wire chucked up a tree when you are out in the bush can only be used with any effect if an antenna tuner is present. Indeed, a wide variety of very satisfying and educational antenna experimentation can be carried out if an antenna tuner is used. I also note that the very best performance can be squeezed out of a 'clever antenna' with an antenna tuner - without the slightest risk of blowing up those precious output transistors!

Consider the advantages of using an antenna tuner if you want to experiment with antennas within your hobby - or even if you just want to extract the best performance from your radio and your antenna. They **really** work...

Happy antenna experimenting and tuning!

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online

by Patrick McDonald

ALL ABOUT COMMUNICATION RELATED COMPUTER PROGRAMS

Jeepers creepers! What's this, boys and girls? Don't tell me it's time for another ONLINE column already? Those months just fly along when you're having fun with your computer and radio! And you grizzled veteran CBA readers know perfectly well that this is just what we're here to talk about again, how to make your beloved radio hobby even more interesting with the use of a little silicon chip wizardry.

Baycom14 For Paket

OK, what's first? Let's look at a little new software...a nice bit of shareware programming just in from Germany, called *BAYCOM14.ZIP*, designed for PACKET RADIO enthusiasts. Now, as you may or may not know, Packet Radio uses the airwaves to transmit not voice or pictures, but computer data.

Interesting concept, no? There are a lot of radio folks here in OZ constantly developing this ever-increasing side of our multi-faceted radio hobby, and new and improved terminal programs like *BAYCOM* are being written all the time. In a nutshell, *BAYCOM* allows you to contact other radio users via their personal computers via shortwave radio, and to exchange messages and data, just like a standard telephone line computer bulletin board, described frequently in these pages. But, natch, in the case of packet, you don't have to pay TELECOM for the privilege! Brief documentation is included with the program and some kind soul in South Australia has translated the original German docs into English for us mono-linguists who have trouble enough with one language. To use the packet radio frequencies with *BAYCOM*, however, you will need to become a licenced radio amateur, or "ham", and this involves passing a written test covering basic radio and electronics knowledge and mastering Morse Code to a minimal level. It's not that difficult, really, and if you want to pursue packet radio further I strongly advise you to follow up your contacts here in CBA or get in touch with the Wireless Institute of Australia for more information on the relevant exams and instruction procedures.

Turn Your Car Radio Into A Shortwave Receiver

Another interesting file that popped up via the world-wide computer bulletin board network called FIDONET is a simple text file, called *SWRADIO.TXT*, a series of instructions on how to make a simple shortwave radio for your car. That's right, the US author claims to have transformed a cheap, secondhand car radio into a receiver capable of picking up international shortwave radio stations, with a couple of hours of work and a few cheap components available at most electronics retailers. For a total cost of less than $20 this bloke was soon cruising his local Main Street while listening to Radio Moscow! Got a minimal amount of 'lectronic smarts? You could do the same, by following a couple of pages of printed instructions. I mention *SWRADIO.TXT* as an excellent example of the kind of informational files that rapidly wend their way around the world via computer bulletin boards, following the same route as application programs like *BAYCOM*. Your computer then becomes a communications resource that complements such great mags as this one, and puts you in touch via the telephone lines with folks in the US, Europe, Africa and Asia, who are modifying their radios, designing new antennas, and exchanging listening tips day and night, non-stop. The sun never sets on the international radio hobby, you know!

Scanbuf - The Ultimate In Communication Databases

Some of you newcomers to ONLINE may want to know about a few of the earlier software applications reviewed here, which you sadly missed by not buying an issue of CB ACTION. Well, on the absolute top of the list is *SCANBUF.ZIP*, probably the most frequently requested program I've ever reviewed in these pages, and still the most popular "download" on the SHORTWAVE POSSUMS computer bulletin board. Billed as "the ultimate in communications databases" and "a radio frequency database for the demanding listener" by its US author, *SCANBUF* is intended for use by those who actively monitor any of the radio bands: UHF/VHF, shortwave, the ham bands, aeronautical and maritime utility stuff, mediumwave stations...whatever.

With *SCANBUF* you can store all the stations and frequencies and other details you want to have close at hand and search for them very rapidly, by station, by frequency, or by callsign. Alternatively, you can simply display all your stored records to the computer screen one by one, adding, deleting and editing them as you see fit. So you can see, this program would be great for hams, shortwave listeners, scanner enthusiasts, anyone who wants to keep frequency and time info available for instant access, without flipping thru hundreds of pages of frequency listings and the like.

Mapper - Second Most Popular Download

The second most popular program in ONLINE annals, and another very common download at SWP BBS, is *MAPPER.ZIP*. This attractive program displays a map of the world centered on a user-selectable QTH (location), and does accurate propagation predictions. *MAPPER* shows the regions of sunlight and darkness around the world, and updates these regions automatically at user-specified time intervals. It can also accept arbitrary times and dates to show what the earth will look like at 4:15am on 16 May, 2125, for instance, if that's what turns you on! The program accepts either DXCC prefixes or latitude/longitude values for the DX location, draws the path from the home QTH to that location, displaying the range, azimuth and wave launch elevation angle from the home QTH, a handy feature for amateur radio operators. I could say more, but I think this gives you a basic idea of what *MAPPER* is all about.

Let's Not Forget Swave

Finally, one of my favorite, evergreen applications is *SWAVE*. Not too many folks seem to download this "integrated package" of three closely related programs, and I really wonder why not! In brief, SWAVE is useful to shortwave listeners especially keen on tracking down those difficult-to-find DX stations. It will help you pick the optimum times for listening for exotic Indonesian or African signals that only slip through the ionosphere a few times each year.

A Trio Of Good Ones

Although of course nothing is absolutely predictable in the field of high frequency radio propagation, this intriguing trio of programs will allow you to test popular propagation theories for yourself, and in the process stay awake at extremely odd hours. Yup, it's totally guaranteed to annoy your wife and family no end! The first program, *MUF*, is a maximum usable frequency application based on the theory that propagation is largely determined by solar sunspot activity and its effect on the F layer of the ionosphere. *GRAY*, on the other hand, scans a user-modifiable database of 400 locations (with data on longitude and latitude) for those stations which are along your "grayline" and hence ripe for dawn or sunset contact. The third program, *SPREADF*, shows how your daily periods of daylight and darkness compare with your target location's similar periods. All pretty useful for DXers and listeners to the world radio bands.

Sorry You Missed The Earlier Reviews ?

These sound interesting? Sorry you missed the earlier reviews? Well, that'll teach you not to buy each new issue of CBA as soon as it hits your local neighborhood newstand! I trust you'll keep up with developments more conscientiously in the future by becoming a regular ONLINE afficionado!

As always, all programs mentioned here are MS-DOS versions, for the IBM compatible line of computers. I wish I could help those of you with other types of machines, but my personal policy is to stick with the near-universal IBM systems. As well, note that this issue's programs are all shareware and not commercial in nature. This means that you are allowed to try them out, share them with friends, and generally discover whether you want to use them longterm, before you send your "honor system" donation to the author. It's a great system, so please try to make it work.

Talking about MS-DOS reminds me: I just got a letter from CBA reader John Abrim in Victoria, asking if I would be so kind as to explain a few basic details about different types of computers for radio enthusiasts new to these beasties. Well, I will try to do so very simply and quickly, as space for this column is always limited, due to the volume of other

superlative articles that also need room in this mag. In general, there are two very common systems of computers, the IBM-compatible types, comprised of a large number of brands, all able to use the exact same MS-DOS operating system; and then there's the APPLE/MACINTOSH system, totally incompatible with IBM machines and employing its own unique operating system. IBMs remain the most common of the two, especially in business settings, and there is much more software written for them. As well, this type tends to be cheaper than equivalent Apples and Macs. For these reasons, I usually recommend that newcomers buy a cheap IBM compatible (I realize that I am leaving out mention of Amigas, Commodores, Ataris and other kinds of computers, but software for these systems is, relatively speaking, quite limited as far as radio enthusiasts are concerned, and none have the overall power and flexibility of IBM compatible machines).

Within the IBM compatible range, there are several gradations. XTs and PCs are the original, slower machines. ATs (called 286s) are the next step upward, offering a much faster operating speed. 386s or their little brothers, 386SXs, are faster still and allow multi-tasking, the useful ability to keep a number of programs operating simultaneously. Finally, the new 486s offer all the advantages of 386s, but with much, much more speed. All programs mentioned here in ONLINE will run on any of these machines, though no doubt users will always prefer the faster models. And on all these machines, users have the choice of utilizing basic, low-capacity floppy disk drives to hold their programs, or installing large capacity hard disks that are the equivalent of hundreds of floppies, allowing the lucky HD owner to keep thousands of programs instantly available, without the nuisance of manually loading floppy after floppy disk from a storage box.

Video displays or monitors for the IBM compatible range also vary considerably, ranging from simple monochrome displays or simple CGA color VDUs, up to the enhanced graphics of the EGA system and the awesome resolution of the various super-duper VGA displays, which are currently state-of-the-art.

So What's It All Mean ?

So what does all this mean for the radio enthusiast? One thing is certain - you can buy a basic XT machine for as little as $500, add a simple color CGA monitor for another couple of hundred, and be underway with nothing more required. You would be able to operate the vast majority of MS-DOS programs and run all the radio programs reviewed in ONLINE. Add a 2400 baud modem for another $200 or so to hook up to your phone line and you're ready to ring any and all bulletin boards around the country or around the world.

If you had up to, say, $1800 to spend, I would recommend the following set-up, a common starting point for computer buffs and small businesses these days: 386SX IBM compatible, 40 MEG hard disk and VGA monitor. You will see a lot of these systems advertised everywhere these days, and most will serve you faithfully for many years to come, an excellent addition to your various radios and able to run every word processor, database, spreadsheet...and game!...that you can think of!

But that's enough re computers for now. Maybe next time I can extemporize in a bit more detail about modems, as this crucial topic features in other common questions in my recently overflowing ONLINE mailbox.

This brings me to a final topic for this issue's column. I have always encouraged CBA computer owners without modem capacity to drop me a pencil-and-paper line with ample return postage for postal distribution of the various software packages reviewed here. Unfortunately, the increasing popularity of ONLINE has meant that I can no longer keep up with posting out floppies, gang, much as I would like to do so.

The little lady of the house, after watching SWP BBS lose money for years, was truly amazed that I had found yet another original way to let cash slip thru my hot little fingers! "Why not just toss your $20 notes on the barbie?" quod she, sarcastically. And I'm afraid she's right this time! I will still endeavor to send out comms programs by mail for those of you who have a modem but as yet no software to use with it, but will have to politely decline requests for other software. However, if your floppy already is in the mail to me, never fear. I will honor all requests from the last mag, if sufficient return postage is enclosed.
The famous address, as always, is:

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And you can easily reach us here via your phone line and modem, 24 hours daily, on (02) 651 3055.

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TX2250 ..... $349

UHF

1. Uniden UHF H/held $499
2. TX-475 2.5W H/held $639
3. Uniden Sundowner 077 ..... $389
4. Leopard $369
5. Elect TX472S $469
6. 4dB non ground plane antenna $28
7. 9dB gutter mount antenna $90
8. UHF 10dB base antenna $150
9. UHF 12dB base antenna $189

MARINE RADIOS

1. Uniden Barracuda $269
2. Pearce-Simpson Sea Wolf $159
3. GME GX287 AM $189
4. Uniden Dolphin MC2700 ..... $149
5. Uniden Sea Wasp MC 4300 ..... $199
6. Marine Aerials & Fittings

SCANNERS

1. Bearcat XL100 H/H $359
2. Bearcat Mobile 760XLT $429
3. Bearcat 200XLT $499

SCANNER AERIALS

Russell Bryant reviews the latest from Icom, the R 7100 receiver/scanner....

"What can I say, it's from Icom"

A QUANTUM LEAP

Twenty three years ago, an important event occurred within the communications industry. The Electra-Bearcat company proudly announced to the monitoring world that they had developed and patented a true scanning radio receiver. Simple by today's standards, this crystal controlled, low channel capacity set arrived on the market and was eagerly accepted by the small but growing monitoring fraternity.

To compare a 1968 scanner to the R-7100 wideband communications receiver is just not possible. It is a quantum leap in technology that defies comparison. Yet relative to the technology, the IC R-7100 is also set to stagger monitors with its performance.

The similarity it bears to its HF cousin, the IC R 72, is not unintentional, in fact they are so much alike that at first glance it is difficult to identify the 7100 from the 72.

What can only be described as 'the best in scanning radio technology' has just been released by Icom. Yet to refer to the IC R 7100 as a scanner is to do this receiver a grave injustice.

IT'S NOT JUST A PRETTY FACE

However, there is more to the R-7100 than simply good looks. The unit has continuous frequency coverage from HF (25 MHz) to SHF (2000 MHz) and this provides access to all the usual VHF and UHF services, but also to satellites and Gigahertz bearers and links.

All that spectrum space would be wasted if AM and FM were the only modes available and of course this is adequately covered in the R-7100. To tune signals from a variety of sources, the IC R-7100 comes standard with SSB (USB/LSB), AM wide, FM narrow and FM wide. Using the optional TV-R-7100 converter you can demodulate stereo FM broadcasts as well as view television on a color monitor.

MASSIVE MEMORY CAPACITY

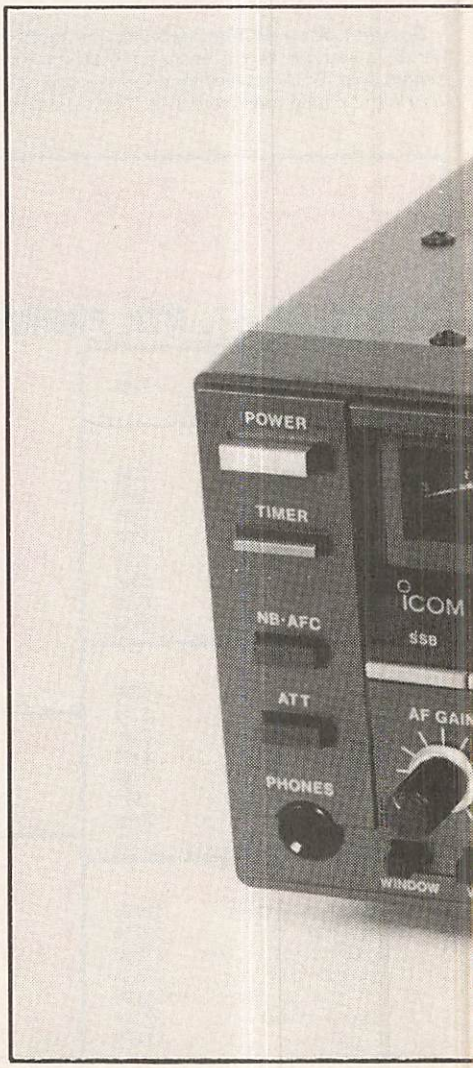
A total of 900 memory channels can be used for storing frequency data, reception modes and tuning increments. The 900 channels are divided into nine banks of one hundred and each bank can be used to store like or related services or be custom tailored to your preference. To search out new or unknown frequencies that may be active in your area, the R-7100 features 20 additional memory channels that can be programmed for just that purpose.

Just when you thought, "what else can it do", Icom answers the question.

FIVE BASIC SCAN FUNCTIONS

There are five basic scan functions. The first, Programmed Scan, enables the user to monitor any signal within a selected scan range. The next, Memory Scan, is familiar to all scanner users as the function which tunes the frequencies entered into memory channels. Possibly the most versatile is Mode Memory Scan, when frequencies of only a specific mode need be monitored. The practical use of this mode is unlimited. If you have a mixture of AM and FM signals within a bank, and you only wish to listen to the AM frequencies, Mode Scan will ignore the FM signals.

Selected Number Memory Scan will check only designated stations of a given type. As a railway monitor, there are only few frequencies that I wish to scan and, by numbering them accordingly and then



selecting Number Memory Scan, I can keep tabs on six or seven interesting channels rather than having dozens of unwanted frequencies. The last but by no means least important function is Auto Memory Write whereby frequencies are automatically entered into memory channels...even when the operator is not present.

WINDOW SCAN

Now if the above functions weren't enough, the R-7100 has Window Scan in which mode the receiver watches for signals on two frequencies alternately. The LCD screen toggles between the selected frequencies at a user selected speed. Rates of 5:0.1, 4:0.5, 3:1 and 2:2 seconds are available at the push of a button. To further stagger the imagination, Window Scan can be combined with any of the five basic scan functions to further increase the receiver's versatility and claim of being 'the best'.

WAIT, THERE'S MORE !

Add to all the above the fact that;

*** tuning increments of 0.1, 1, 5, 10, 12.5, 20, 25, 100 kHz and 1 MHz are selectable from the front panel.**

*** a noise blanker eliminates pulse type noises common with AC appliances.**

*** a built in attenuator drops strong signals by 20dB, thereby eliminating receiver overload.**

*** to prevent lockup on unmodulated signals and carriers a Voice Scan Control is incorporated within the design.**

USER FRIENDLY

A term more associated with the computer industry, user friendliness refers to the ease of operation and the Icom falls within the 'very user friendly' category. If the handbook was missing it would not render the receiver unusable as an estimated 90 percent of functions and controls could still be used without reference to the manual. That, however, doesn't mean that you should not consult the booklet before operating the unit. Typically Icom, the instruction manual comprehensively details the setting up, operation and special features of the receiver with none of the fractured English or vague descriptions of features often associated with Japanese manufactured radio equipment.

The power of this receiver is not just how well it picks signals out of the air as that can almost be taken for granted, but also how the multiple functions of the unit are brought forward to the front panel. It oozes simplicity of operation and immediately puts the user at ease, giving him the confidence to obtain the best results from this virtual 'benchmark' item of equipment.

INSTANT EASE OF USE

From the moment I turned the IC R-7100 on, I was comfortable using it...and this is not something I can say about many of the review units which pass through my shack.

(continued over page...)

New Icom receiver weighs in at a hefty 6 kilograms. Controls follow the general Icom styling as used on other base type units with virtually all controls being of the push button variety.

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UH-001	UHF CB	$299
UH-005	UHF CB	$489

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PRO-510E	AM CB	$109
PRO-520E	AM CB	$129
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IC-R7100
25Mhz-2Ghz

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IC-R71A 100Khz-30Mhz	$1580
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IC-R9000 100Khz-2Ghz	$6670

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To display a frequency on the large LCD enter the numbers as usual then press ENTer. From there you can enter the frequency into a memory channel by depressing the MW (memory write) key and then wait for the beeps to acknowledge receipt of the data.

To work your way up and down from the frequency you have just entered, move the main dial in the desired direction. The frequency display alters according to the tuning step selected.

In the bottom left of the display is a cursor. When forming a square, the cursor indicates the centre of the frequency. If you are off frequency, the cursor tells you which direction is the centre of the frequency.

If the AFC or Automatic Frequency Control function is selected and you have tuned the receiver off frequency, the AFC will tune to the centre frequency as soon as a transmission is detected.

It is amazing how many stations are off frequency, sometimes 2 to 3 kHz off their correct allocation.

EXCELLENT SENSITIVITY

As might be expected from all the above, sensitivity on all bands is excellent with the figures quoted for narrow band FM of less than .35 microvolts seemingly conservative, especially when tuning overseas skip stations. An American Paramedic service on 33.9 absolutely boomed in while airport based surface control channels were almost full noise quieting whereas normally they are barely audible.

For SSB the sensitivity is given as less than .2 microvolts, AM less than 1.6 and WFM 1 microvolt. Image problems are non existent as triple conversion for all modes except wide FM takes care of them. The intermediate frequencies for the band 25-512 MHz are 1st 778.7 MHz, 2nd 10.7 MHz and third 455 kHz while for frequencies above 512 MHz the IF's are 266.7, 10.7 MHz and 455 kHz. On wideband FM only the first and second IF's are employed.

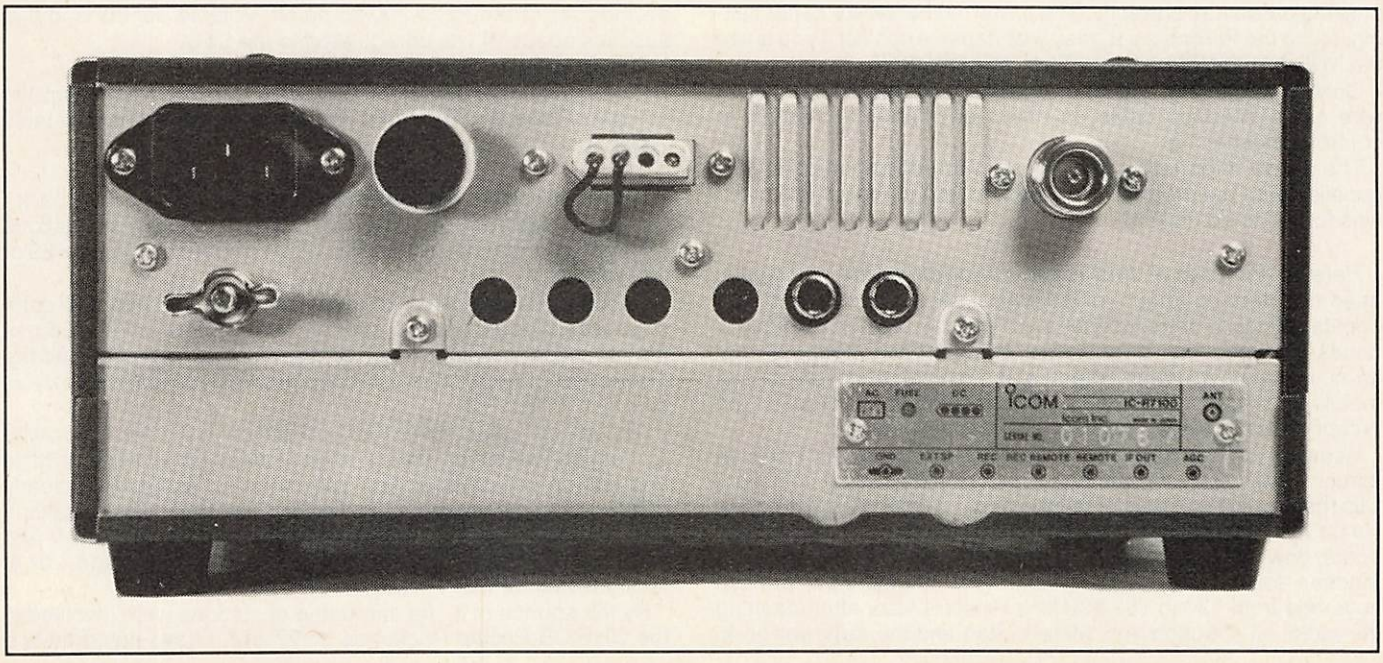
LITTLE NEED FOR EXTERNAL SPEAKER

The built in two watt speaker is top mounted and delivers more than acceptable audio and I am told that a certain Icom executive uses a 7100 to monitor the SBS test pattern music...expensive FM receiver !

Joking aside there is little need for an extension speaker, however, provision is naturally enough made for one on the rear panel. Speaking of which, the rear panel supports an 'N' type connector, (standard Icom furniture), AC and DC power connectors plus recording jack and remote control socket. Accessories supplied with the 7100 include AC power cord, DC lead, mounting hardware and audio connectors while optional equipment includes a wideband discone, three external speakers, TV receive adapter, voice synthesizer unit and computer control converter.

FINAL ASSESSMENT

The Icom IC R-7100 is not cheap with a recommended retail price in the region of a cool $2,000 and for this price you receive a professional standard wideband communications receiver. In fact, barring the IC R 9000, I would rate it as the best scanner, (sorry Icom, they don't like them to be called scanners), yet.



bandspread

FROM DC TO DAYLIGHT *with Greg Towells*

Welcome again to Bandspread, the column that covers topics from literally DC to Daylight. Bandspread is the column for readers with interests in everything from amateur radio, CB, scanners and shortwavers to computer buffs, all covered by specialist column elsewhere in this mag, but in a different way here!

Stay tuned radio tinkers, there are more modificationss and things coming up. Be warned, however, before attempting any of the modifications described in this column, that although these mods have been carried out and do work, we accept no responsibility for any damage caused by any reader, and as the editor pointed out last issue, **WILL DEFINITELY VOID YOUR WARRANTY IF CARRIED OUT BY YOURSELF.**

Now read on and enjoy!!

The postal address for any information for this column is **P.O. Box 577, St Marys, NSW, 2760.**

* PAKET 4 FOR PACKET RADIO

Paket V 4.0 is a program for packet radio operators (limited and full call amateur radio licensees) and has a number of interesting features. A full help file for common TNC's and an inbuilt file server (similar to a phone bulletin board system) are but a few of this program's features. It is available from most good phone bulletin board systems and one instantly springing to mind is of course ***Shortwave Possums, phone (02) 651-3055.***

Some users of Paket V4.0 have complained of a number of difficulties when using YAPP binary file transfers. Here are a few hints and points to observe which may prove useful.

Firstly, read the manual thoroughly (usually a good starting point)! However, a few quick hints to get you out of trouble right away!

Ensure that the number of comms windows you have Paket4 configured for agrees with the USER parameter in the TNC (see page 20 of the .doc file). Ensure that you are using the handshaking procedure correctly. The preferred hardware handshaking, using the full cable set, may well cause a conflict if you leave the TNC XFLOW ON set on. **Turn XFLOW OFF.**

Only use software handshaking when you are limited to a 3 wire cable interface cable, in this case, turn XFLOW ON to control handshaking.

The above information is all there in the documentation files supplied with the program, so take the time to read it, just like I was forced to do myself!

* ALINCO DR-110T MOD

Here is the first of this issue's modifications and again, heed the warning about voided warranties. This one is for the popular Alinco 2 metre mobile radio (which falls into the amateur bands for those who don't know), which boasts heaps of features, including 45 watts output, and is one of the lowest priced mobile 2m radio on the market. The modification increases the reception and transmission bandwidth considerably.

Remove the top cover. Find the yellow wire at the front left corner (next to the tuning knob), it makes a loop about 4cm long. Clip the wire in two and insulatethe ends. Replace the top cover. Reset the radio as per the manual (i.e. hold the 'f' and 'vfo/m' button down while turning the radio on). To change bands, press function followed by Mhz button. This should now provide coverage from 130 to 169.995 Mhz receive. Also, after resetting the radio, hit 'f' button and 'MHz' button and the radio will go to receive from 340 to 380 Mhz. Again hit the 'f' and 'MHz' buttons and the radio will receive 870 to 890 Mhz, hit the 'f' and 'Mhz' yet again to go back to 2 metres. A nice little bonus!

* ADD A 'BUSY' LIGHT TO YOUR TANDY PRO-2004

If your radio shack is like mine, it is full of scanners, transceivers and general coverage receivers, all chattering away at the same time. As a result , it can be difficult to quickly determine which radio is 'talking'. Many of my radios have external speakers attached, so spatial separation helps a little.

In addition to 'hearing' which radio is active, I find it very helpful to 'see' which radio is operating, particularly where I need to know which frequency on a particular scanner is active to know which service just said what! In this situation, carrier operated lights are an ideal means of providing effective visual cues. The ideal is to illuminate a lamp when a signal opens the squelch. A small light emitting diode (LED, any colour) is well suited to this purpose.

The following modification works well on all PRO-2004 modes.

To add a COR (carrier on receive) light to the PRO-2004, this mod makes use of the 'scan control' pin (pin 13) on IC2, the TK10420 IC. Pin 13 has voltage present only when a signal is detected. This chip contains the IF, detector, limiter and squelch circuitry for NBFM.

If you develop an attack of the shakes when you start to use an electric drill you are probably well advised not to try this particular mod.

The LED can be mounted in a small hole drilled through the plastic front panel, just to the right of the headphones jack. Electronically, the circuit is simple. The voltage at pin 13 is not enough to drive the LED directly so a general purpose NPN transistor (eg a 2n2222) can be used as a solid state switch.

Pin 13 of IC2 is connected to the transistor base through a 10k ohm resistor. The emitter of the transistor is connected to ground. The collector is connected through a 1k ohm resistor to one end of the LED. This resistor limits the LED current to about 13 milliamps. The other end of the LED is connected to one contact on the rear of the PRO-2004's on/off, volume control and this supplies about 14 vdc unregulated to the LED.

That is about it - not exactly difficult eh!

Re-assemble the scanner and power-up for the smoke test. No smoke ? Good, it should light up whenever the scanner detects a signal.

* PACKET ON 27MHZ FM

Regular readers may remember that several months back I related an incident on UHF CB where a number of stations established a clandestine packet bulletin board on channel 29 or thereabouts.

Recently, I was poking around 27.565 Mhz and heard all sorts of unusual signals at good strength. Since the Icom IC-735 has the FM mode, I switched it on and straight away recognised the distinctive sounds of packet radio. Here we go again, except tyhis time on 27 Mhz FM.

I quickly connected the PK232 up and away it went. There was something like six or more stations swapping all sorts of hints and tips on packet operation and mods for same were clearly displayed on my screen. For a few months the mystery stations with the imaginative callsigns have operated sporadically and even a station from Queensland joined in at one stage (or at least he said he was in QLD, know who he is, Rod ?).

By the sounds of it, the same ring of stations were involved in the UHF CB Packet Racket as on 27 FM. I have noted quite a

few frequencies used around the high end of 27 Mhz and a few times around the low end of 26 Mhz. Although it is quite obviously illegal, it was an interesting experiment and I ask again, would one of you mystery stations drop me a line with a few details about the operation, particularly whether the 'Queensland' station was for real.

* DX AND DUCTING

And on the subject of DX, long distance contacts are not limited to the HF bands. There have been a number of smoggy days here in Sydney recently (unlike our usual excellent weather ho, bloody ho) where the pollution has been trapped by inversion action which occurs when the hot air rising from ground level is held down by a layer of cold air coming down from the mountains. During these times, extended range on VHF and UHF contacts has been noted, particularly when working remote repeaters. During one sequence of particularly severe inversions, stations worked repeaters right up and down the coast of NSW for a continuous period of three days. The contacts I made were perfectly clear and unvarying in strength for considerable periods.

Unfortunately, many operators on UHF CB are unaware of the fact that these contacts are possible and many of my contacts on UHF CB ended abruptly after informing the station of my location at which time the other station thought I was having him on. Fortunately some stayed on and I enjoyed some interesting conversations. So if someone on UHF CB tells you he is located at an extreme distance from you, take the time to listen, not everyone talks rubbish on CB and you might be surprised.

* NEW SCANNER FREQUENCY REGISTER

There are lots of various frequency registers, books and other publications available on the market to satisfy most scanner enthusiast's quest for more frequency information. There are ones sorted by frequency, by name, state and just about any other way you could desire. One common failing that most of the listings have in common is that they list EVERY frequency and its user within the range of the book...

Whats wrong with that, you ask ? Nothing, if you enjoy listening to the comings and goings of your local plumber, taxis or real estate agent. However, if you enjoy listening to government services, which after all is where most of the real action is to be found, then the average frequency listing means hours of searching through heaps of totally useless frequencies and information. Problem solved, with the Register of Government Radio Frequencies, covering services in New South Wales and ACT. This marvellous frequency information book just covers Commonwealth, State and Local Government and Statutory Authorities frequencies.

Naturally, services such as police, ambulance, fire, railways, aircraft and just about any other government service using VHF/UHF frequencies are listed. That is not the only aim of this comprehensive publication. One of the main aims of the register is the inclusion of the associated radio codes, callsigns for each service, as well as service areas, area frequencies and a wealth of other information is provided to enable the scanner enthusiast to decipher and make sense of what is being heard.

In most instances channel numbers are included, which is most important when units are instructed to move to another designated channel. I think that nothing is more annoying than to be listening to a good piece of action, only to lose it for sometime when they shift to an announced channel that I do not have the frequency for...

Well, not any longer. I received my copy a month ago and have not put it down since. In conclusion, it is a most worthy addition to every scanner users' library...no make that desk, since it should be in use every time you use your scanner. No other scanner book in my experience has made available in one place so much information, not just a list of mere frequencies, but as much vital information relating to the users of those frequencies as you wish. The Register of Government Radio Frequencies is available from **Access Communications in Chatswood, NSW** for less than $20. Run, don't walk, to get yours.

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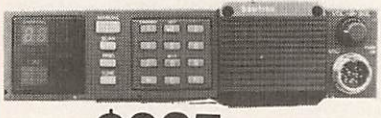

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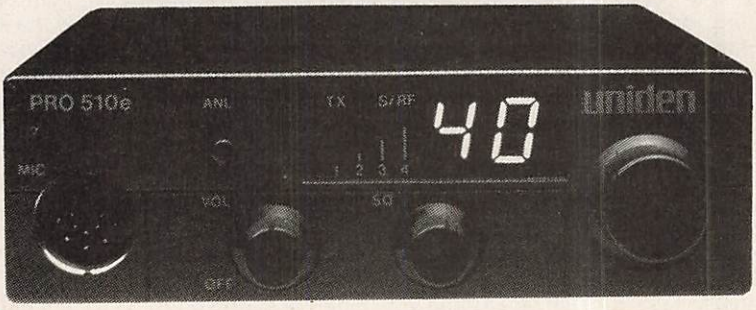

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Cat D-2825

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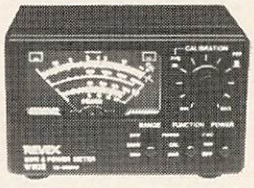

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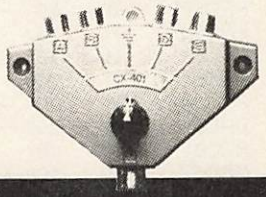
A high quality 4-way coax switch featuring rugged die-cast aluminium construction, 2kW P.E.P. (max.) power handling at 30MHz, and only 0.3dB insertion loss. What's more it has an in built surge suppressor and automatic grounding of all unused connections to help protect against lightning induced surge damage.

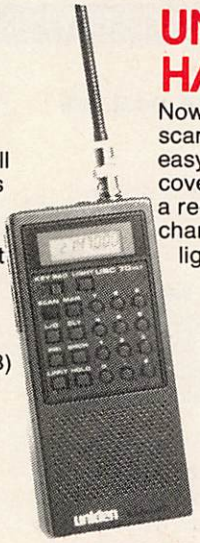
Cat D-5204



$89.95

An Exceptional Buy!

UNIDEN 70 XLT HANDHELD SCANNER



Now here's value! This high quality hand-held scanning receiver from Uniden is a gem. It's very easy to operate, has 20 memories, 8 band coverage, receiver track tuning, and it comes with a rechargeable NiCad battery pack, approved AC charger and durable carry case. What's more, it's lighweight and small enough to fit in the pocket.

Frequency Coverage:	66-88MHz
	136-174MHz
	406-512MHz
Sensitivity:	0.4uV 66-88MHz
	0.5uV 136-174MHz
Cat D-2740	0.7uV 406-512MHz

$249 uniden

QUALITY 2-WAY COAX SWITCH

This high quality 2 position 50ohm coax switch is suitable for HF, VHF, and UHF use up to 1000MHz. It offers superb isolation (>70dB @ 200MHz), low insertion loss (<0.1dB @ 1000MHz), and 1kW P.E.P. HF power rating.

Cat D-5208

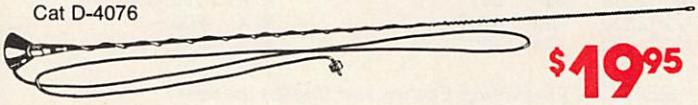
$59.95

BARGAIN CB ANTENNAS

1.5m HELICAL ANTENNA PACK

The most popular of all our mobile CB antennas! Provides high performance in a compact package. With its own special base, 3.6m coax and plug... it's excellent value for money.

Cat D-4076



$19.95

1.5m SUPERHELICAL WHIP ANTENNA

This continuous loading helical whip was designed using the latest computer technology. It's wound on a rugged fibreglass former with a constant turn winding and exhibits a radiation pattern similar to a full sized quarter wave whip. Standard 5/16" female termination.

Cat D-4094

5 YEAR WARRANTY

$29.95

DICK SMITH ELECTRONICS

B1225/MS

scan

by Russell Bryant

FREQUENCIES, CODES and EVERYTHING ELSE YOU WANT TO KNOW ABOUT SCANNING

All frequencies are FM and all times are local, unless stated otherwise.

IN THE BEGINNING, PART FOUR.

For some,their introduction to scanning is via secondhand or pre-loved equipment, and the price that should be paid for secondhand gear is often vague. This is, I think, as near a complete list of scanners as is possible to obtain. Some of the more recent models have not been included, mainly because of their release after this column went to bed.

Before going any further, this is a guide only. The prices are an indication of what you may pay for a given model, it should not be treated as the be all and end all of secondhand scanner prices. The standard used in determining the price was simply a scanner in good condition with its aerial (where originally supplied by the maker), and the instruction manual.

It can be expected that some scanners will attract higher prices because of their condition and accessories. In that case the values shown here are a good place to start haggling.

SCAN'S READY RECKONER TO SECOND HAND SCANNERS

TYPE:*B=Base, M=Mobile, H=Handheld/Portables*
FREQ:*L=VHF low, A=VHF air, M=VHF mid, H=VHF high, U=UHF, C=Continuous, 8=800 MHz*

MODEL	TYPE	CHs	L	A	M	H	U	C	8	PRICE $
A.O.R										
AOR 880	H	20	-	-	X	X	X	-	X	150 - 200
AOR 900	H	100	-	X	X	X	X	-	X	250 - 300
AOR 950	M	100	-	X	X	X	X	-	X	300
AOR1000	H	1000	-	-	-	-	-	X	X	350 - 400
AOR2001	BM	20	-	-	-	-	-	X	-	200 - 250
AOR2002	BM	20	-	-	-	-	-	X	X	500 - 600
AOR2500	BM	2000	-	-	-	-	-	X	X	500
AOR3000	BM	400	-	-	-	-	-	X	X	1000- 1200
BEARCAT (including Electra and Uniden models)										
50XL	H	10	X	-	-	X	X	-	-	100 - 120
50XL	H	10	-	-	X	X	X	-	-	100 - 125
50XLT	H	20	-	-	X	X	X	-	-	150 - 200
100	H	16	X	-	-	X	X	-	-	50
100XL	H	16	-	X	X	X	X	-	-	150
100XLT	H	100	-	X	X	X	X	-	-	200 - 250
145XL	BM	16	-	-	X	X	X	-	-	100 - 125
150FB	B	10	-	-	X	X	X	-	-	50
175XL	BM	16	-	X	X	X	X	-	-	150 - 200
200FB	BM	16	-	X	X	X	X	-	-	100
200XLT	H	200	-	X	X	X	X	-	X	300
BC210	BM	10	X	-	-	X	X	-	-	100
220FB	BM	20	-	X	X	X	X	-	-	100 - 125
BC250	BM	50	-	-	X	X	X	-	-	100 - 125
560XLT	BM	16	X	-	-	X	X	-	-	100
590XLT	BM	100	X	X	-	X	X	-	-	200 - 250
760XLT	M	100	-	X	X	X	X	-	X	300
800XLT	BM	40	-	X	-	X	X	-	X	100 - 150
COBRA										
SR 12	H	16	X	X	-	X	X	-	-	150
SR 15	H	100	X	X	-	X	X	-	-	150 - 200
SR 15	H	100	-	X	X	X	X	-	-	200 - 225
DICK SMITH										
PRO 40	BM	40	-	-	X	X	X	-	-	50
FAIRMATE										
HP100	H	1000	-	-	-	-	-	X	X	300
HANDIC										
FOR FEATURES AND PRICE CHECK TANDY SCANNERS										
ICOM										
IC1	H	100	-	-	-	-	-	X	X	450 - 500
IC100	B	100	-	-	-	-	-	X	X	700 - 800
IC7000	B	99	-	-	-	-	-	X	X	1200-1400
IC9000	B	1000	-	-	-	-	-	X	X	5000
J.I.L										
SX100	BM	16	-	X	X	X	X	-	-	50
SX200	BM	16	-	X	X	X	X	-	-	100
SX400	B	160	-	X	X	X	X	-	-	250
KENWOOD										
RZ 1	BM	100	-	-	-	-	-	X	X	400
MICROCOM										
SX160	H	160	-	-	X	X	X	-	-	50 - 100
REGENCY										
M100E	M	10	-	-	X	X	X	-	-	150
M400E	M	30	-	-	X	X	X	-	-	200 - 250
T720A	B	16	-	X	-	-	-	-	-	100
HX 850	H	20	-	X	X	X	X	-	-	200
HX 1000	H	30	X	-	-	X	X	-	-	100
HX 2000	H	20	-	X	X	X	X	-	-	150 - 200
MX 4000	M	40	-	X	X	X	X	-	X	200 - 250
SAIKO										
C1600	M	16	-	-	X	X	X	-	-	100
SC4000	H	40	-	-	X	X	X	-	-	50
SC7000	BM	70	-	X	X	X	X	-	-	100
SC8000	M	50	X	X	X	X	X	-	-	150 - 200
STANDARD										
AX700	B	100	-	-	-	-	-	X	X	400 - 450
TANDY (REALISTIC)										
PRO2001	BM	16	-	-	X	X	X	-	-	100
PRO2002	BM	50	-	X	X	X	X	-	-	100
PRO2004	B	300	-	-	-	-	-	X	X	350 - 400
PRO2005	B	400	-	-	-	-	-	X	X	400 - 450
PRO2006	B	400	-	-	-	-	-	X	X	450 - 475
PRO2008	B	24	-	-	X	X	X	-	-	100
PRO2009	B	8	-	-	X	X	X	-	-	50 - 75
PRO2010	B	20	-	X	X	X	X	-	-	100
PRO2011	B	20	-	-	X	X	X	-	-	100
PRO2020	BM	20	-	X	X	X	X	-	-	100 - 150
PRO2021	BM	200	-	X	X	X	X	-	-	200
PRO2022	BM	200	-	X	X	X	X	-	X	250
PRO2024	B	60	-	X	X	X	X	-	-	100
PRO30	H	16	-		X	X	X	X	-	50 - 100
PRO31	H	10	-		-	X	X	X	-	50
PRO32	H	200	-	X	X	X	X	-	-	150 - 200
PRO33	H	20	-	-	X	X	X	-	-	100
PRO34	H	200	-	X	X	X	X	-	X	300 - 350
PRO38	H	10	-	-	X	X	X	-	-	150 - 125
PRO57	B	10	-	-	X	X	X	-	-	100
YAESU										
FRG 9600	B	99	-	-	-	-	-	X	X	500 - 600

MODEL	TYPE	CHs	L	A	M	H	U	C	8	PRICE $
FRG 965	B	99	-	-	-	-	-	X	X	450 - 500
** YUPITERU*										
MVT 5000	H	100	-	-	-	-	-	X	X	250 - 300
MVT 6000	BM	100	-	-	-	-	-	X	X	300 - 325
MVT 7000	H	100	-	-	-	-	-	X	X	400 - 500

MAILBAG

UP IN THE SKY...

Garry, Bathurst NSW, became bored with monitoring the usual services, so he went searching for something different. He discovered the compulsive listening of the US Navy Fleet Satellite on frequencies 261.450 to 261.950 narrow band FM. Callsigns logged include HOTBOX, SATIRE, CORNICE (not Korneez as originally thought), COBRA, DOC and LANCER. Active frequencies include 261.450, 261.525, 261.625 and 261.850 MHz. As an update on the FLTSATCOM, callsign MOJO is a C 12 aircraft which is the military version of the Super King Air. It is used as a short-haul personnel and light cargo shuttle. An indepth update on the FLTSATCOMs will be the lead in the January '92 column.

BACK DOWN ON EARTH

Matthew, Reynella SA, uses a PRO 31 to monitor these frequencies: Ambulance channel 1 159.190, channel 3 159.070 and channel 5 158.470. Metro fire channels 1 168.820, 2 168.850, 4 168.340. CFS on 163.120 and SES on 167.290 MHz. Something for readers to check out SAFM Blackthunders on 485.600. Television station 7 uses 486.600, 485.325 and 487.400 and TV channel 9 489.500. Matthew would like to hear from anyone who has a copy of the PRO 31 handbook, or photocopy thereof.

SPY VERSUS SPY

Phillip, Melbourne VIC, has just returned from a visit to the US, where it seems the major pre-occupation of scanner users is tracking down frequencies allocated to the CIA, or Central Intelligence Agency. He asks if our cloak and dagger men at ASIO use two-way radio and if so their frequency? Phillip, I can understand the Americans monitoring the CIA, after all their operations make ASIO look like a troup of Boy Scouts. To the best of my knowledge ASIO use radio, however their frequency is not known. They do use DVP or Digital Voice Protection so monitoring it would be a little futile. Some time ago I was introduced to someone who was an ASIO operative, however any questions as to radios and frequencies was met with an unqualified "NO COMMENT".

WA 'OOO'

Peter, Cloverdale WA, has logged these emergency service frequencies. Police channels 467.950 CH.5 Gin Gin, 468.050 CH.9 Fremantle, 468.275 CH.18 Ocean Reef, 468.500 CH.27 Perth portables, 468.575 CH.30 statewide portables, 468.875 CH.42 Midland, 468.950 CH.45 VKI Security and 469.425 CH.64 Rockingham. St.John Ambulance 412.475 Belmont Base, 412.575 Perth QEII Hospital, 413.125 Fremantle/Rockingham, 413.150 Osborne Park/Joondalup, 413.300 Mandurah/Rockingham, 413.350 Yanchep/Joondalup, 413.375 Mundaring/Belmont and 413.425 Rottnest/Fremantle. Finally, some WA Fire Brigade channels 75.830 Perth Base, 76.070 Perth-Claremont, 76.130 Perth-Osborne Park, 76.610 Perth-Fremantle, 77.070 Perth and 77.120 Perth-Gnangara.

QLD POLICE VHF

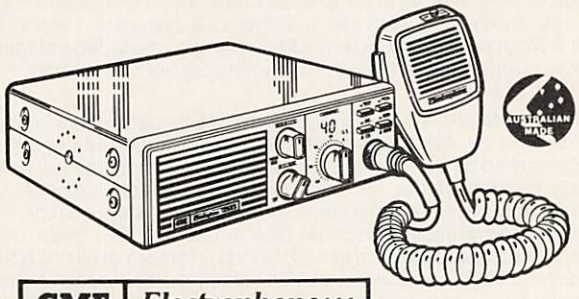
Graeme, Esk QLD, uses an AOR 1000 to listen in on the following Queensland Police VHF channels:77.480 Ipswich country, 76.355 Toowoomba, 76.490 Gatton, Kingaroy and Gympie, 77.565 Gold Coast, 77.345 Beenleigh, 74.000 Ipswich Fire Brigade and finally 82.980 District Ambulance. Whilst on the subject, the Queensland Ambulance Service has all but converted its Brisbane radio network to UHF. The frequencies are in the national allocation around 413 MHz. An update on the new system will be included in a future column. Graeme asks if there is a BFO unit available to permit reception of SSB signals on his AOR. An external BFO suitable for the AOR would cost in excess of $250. Because the smallest step increment on the AOR is 5 kHz, the BFO may not be successful.

SOME QUESTIONS ANSWERED

Marc, Ashfield NSW, checks in with a host of frequencies, plus the answers to a few questions readers were asking. For Paul in Wentworthville NSW, here is a list of hire car and chauffeur services: 470.250 Premier Limos, 493.350 Castle Hill Limos, 165.550 Hurlstone Park Hire Cars, 488.350 Ambassador Hire Cars.

(continued over page....)

GME Electrophone



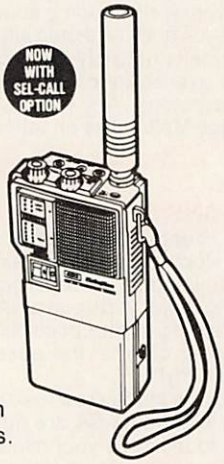
GME | Electrophone:::

Model TX472S
40 Channel UHF Transceiver

- Designed and Manufactured in Australia.
- Full front panel control over all scanning modes.
- Rugged construction and S.M.D. circuitry

TAX EXEMPTION FOR PRIMARY PRODUCERS

NOW WITH SEL-CALL OPTION



TX475S UHF HANDHELD

- Full 40 channel operation.
- Ultra compact size.
- Large 450 mAH battery.
- Switchable HI/LO power.
- Designed and manufactured in Japan for Australian conditions.

Available From

WA CB CENTRE
422 NEWCASTLE STREET PERTH WA 6000
PHONE: (09) 328 6254 FAX (09) 328 4183

scan

by Russell Bryant

CONTINUED FROM PRIOR PAGE.....

Marc would like these frequencies identified: 495.550, 414.550,414.600 through to 414.675, 510.300, 436.200, 436.300 and finally 450.000. The frequency 495.550 is the repeater input for 490.350 which is a Sydney Electricity allocation. Combined Taxis use the 414 MHz frequencies. Also a repeater input frequency is 510.300 this time for 500.300 which is the Telecom linesmen and technicians' network. It appears that the 436 MHz and 450 MHz frequencies are images as there are no taxi allocations on these channels as you indicated in your letter.

WE HAVE MOVED

Jim, East Brunswick VIC, has been told that Victorian Education Security has vacated its old frequency of 490.725 MHz in favor of a 800 MHz trunking allocation. Can any Melbourne reader assist with a lead as to their new numbers?

AMBULANCE LINKS

Gary, Gympie QLD, monitors the Queensland Ambulance on 470.075 MHz, which appears to be a link channel among many of the south eastern brigades. An interesting discovery as this is a repeater allocation for the Government Motor Garage. Any comments on this are welcome. What are the current VHF police channels for Queensland, asks Gary. The Queensland police have the following mid-band VHF allocations: CH.41=77.540, CH.42=77.420, CH.43=77.480, CH.44=77.510, CH.45=77.450, CH.46=77.570, CH.47=77.495, CH.48=77.375, CH.49=77.330, CH.50=77.345, CH.51=76.400 77.420, CH.52=76.430 77.450, CH.53=76.490 77.510, CH.54=76.355 77.375, CH.55=76.520 77.540, CH.56=76.550 77.570. Channels 51 to 56 are repeaters, with the first frequency being the output channel.

WHO OR WHAT IS OTC

Jeremy, South Yarra VIC, has just arrived from the 'Old Dart' and wonders who is OTC? OTC or the Overseas Telecommunications Commission is responsible for overseas telephone services as well as maintaining the marine coast stations and radio telephone services.

TELEVISION CARRIERS

Trevor, Belrose NSW, asks, who uses the frequencies between 170-225 MHZ and 520-820 MHz. The most prolific user of the two bands mentioned is the television industry. Television audio and video carriers occupy nearly all the frequencies in two bands.

HI SEAS HI JINX

A Victorian reader sent in an interesting cutting from the Melbourne Herald-Sun of 17 May. It seems that smugglers are using radio to co-ordinate their illegal activities around the Victorian coastline. It maybe worth keeping an ear on the less used marine VHF channels for such activity, especially in the late night/early morning hours. VHF marine is possibly the most used radio band on and off the water. The availability of cheap gear makes it ideal for pirates of various persuasions. Any information should be passed onto the Federal Police Melbourne on telehone number (03) 607 7777.

PROPAGATION

THANKS FOR THE MEMORY

A recent study in the US suggests the idea of ni-cad batteries developing a memory has no substance. Problems occurred, when a single batch of rechargeable cells failed to charge correctly, while being employed upon a NASA spacecraft. NASA immediately issued a warning of 'the possibility' of ni-cads having memories. With the passing of time 'the possibility' has developed into an electronic urban myth.

For my money I can see no disadvantage in cycling rechargeables, just in case NASA are right. As to you the reader, I will leave it for you to make up your minds on the subject.

FREQUENCY GUIDES

A flick through the pages of CBA will illustrate the number of scanners available, base mobile and handheld. In fact there is a scanner to suit all situations and needs. Add to this the variety of receiving antennae on the market, one would assume there is little that scanning lacks. Or is there?

The one thing denied the scanning enthusiast is good frequency information. By good, I mean accurate. Not that long ago several known and a few unknown companies and individuals entered the frequency guide market with very poor results. Frequencies were often inaccurate or downright wrong. Needless to say they are no longer relied on for data.

It was around this time, 1984, that the then Department of Communications, now DoTaC, released the AMFAR microfiche under the Freedom of Information Act. Provided you owned or at least had access to a microfiche reader it is/was a wealth of frequency facts and figures. It did however, have a few drawbacks. Often the pursuit of a particular frequency, was to a point, like looking for a needle in a haystack. It was necessary to search through volumes of data just to find a single allocation.

Eight years ago Richard Barrett sat down at his computer and systematically recorded all the relevant details from the microfiche. He then had the information printed and offered it for sale. For the hobbyists it was frequency heaven, not only was the frequency data accurate (as accurate as DoTaC records would allow), it was easy to use and provided a state-by-state library of radio users.

Since those humble beginings Emergency Services Guides or ESG, the company of which Barrett is head, has endeavored to provide not only general frequency guides for each state, but also specialist publications for the airband, marine and emergency services monitors.

ESG has not rested on its laurels, two new guides have been released catering to the law enforcement listener as well as the railway monitor. I know from personal experience they are two of the most popular fields in scanning. Both guides contain all the entries for their respective areas, gleaned from DoTaC files.

To mark the release of the new books, ESG has made available to SCAN six copies of each. They have left it up to me to decide how they should be distributed.

If you would like a copy of either the Law Enforcement ESG, or the Railways ESG, here is what you have to do: 1.Each entry must include a sticker from a local radio station, any radio station will do if you can't get one from your local. 2.What do the letters ESG stand for? 3.Guess my age, to help, I am between 30 and 40 years old. 4.Name two of the advertisers in this magazine that sell ESG guides. 5.Tell me which guide you would like, Law or Rail.

Address your letters to ESG Giveaway, ***SCAN PO BOX R16, ROSELANDS NSW 2196.***

PERSONAL REQUEST

Are there any readers from New Zealand, as well as the other states of Australia, who happen to be railway enthusiasts and own or have access to a VHS video camera? If there are, I would like to hear from you, with the view to exchanging home videos of railways. Please contact me at the address at the foot of the column.

HIGHER EDUCATION

The New South Wales Department of Education has introduced a radically new radio network to service remote areas of the state. Implemented as part of the School of the Air, the radios will use VHF bands instead of the HF frequencies previously employed. The Department cites atmospheric interference, degradation during daytime and adjacent channel interference as the main reasons behind the departure from the HF bands. Remote areas of NSW will be covered using a number of VHF channels operating in the form of cells. Clear communications over a radius of 100 kilometres is expected. It is anticipated that other states will follow, thereby eliminating many of the problems plaguing SOTA.

AIRCRAFT ON-BOARD MONITORING

For some time now the universal answer to the continually asked question can a scanner be used on-aboard an aircraft in-flight was NO. Generally the response was given without reference to the airline companies themselves.

An avid aviation monitor and reader of SCAN, decided to put the airline groups to the test. The gentleman concerned wrote to each company explaining his hobby and that of many like him, then simply asking if he would be permitted to use a scanning receiver in-flight.

While the majority of answers were predictable, some were happy to allow it, with only two conditions. One, that it in no way disturbed fellow passengers. The other, that it was always at the discretion of the Captain. Contained herein is a list of companies and their responses:

Malaysia Airlines-No. Singapore Airlines-No. Compass-No, at this stage. Delta Airlines-No. Lufthansa-No. O'Connor Airlines-Yes, provided earphones are used. Ansett-No, but willing screen equipment to test for interference.
Kendall Airlines-Yes, if other passengers are not disturbed and the Captain agrees. Air New Zealand-Yes. LanChile Airlines-No. KLM-No.

Air New Zealand are the only international airline to allow the use of scanners on-board without qualification. Several of the smaller domestic airline companies also permit scanning, it appears however, the larger carriers are still shy of it.

NEW PHONE BANDS

In several past issues of SCAN, we have published frequencies in the 900 MHz band, that are used by radio stations as links between their studios and the remote transmitter site. Next year will see the band vacated, with the radio stations being re-allocated to the 1200 MHz. The cleared frequencies will be re-allocated to two new telephone services.

The Public Access Cordless Telephone Service, (PACTS), and the Public Mobile Telephone Service, with the unfortunate initials of PMTS will both be on line by March 1992. Before you go searching for the action, both systems are digital and unable to be scanned. But then you are not allowed to listen in anyway.

NEWCASTLE SCANNER GROUP

The Newcastle District Scanner Group is now up and running and open for membership. An annual fee of $10 entitles members to a quarterly newsletter, plus discounts off the price of frequency lists, as well as other related items. Regular meetings will be held in the near future.

This is the ONLY radio club dedicated to scanning, if you are interested in membership or have any enquiries contact the club at ***PO Box 728 CHARLESTOWN NSW 2290.***

THE COMPUTER GOT IT WRONG

This time I can blame the mainframe computer at CBA for getting it wrong. In the July/August edition I gave the various bands and the channel spacing relevant to that band. Terry, Williamtown NSW, points out an error that occured in the band 148-170, channel spacing 415 kHz. It should read band 148-174 MHz spacing 15 kHz, except for the marine VHF which is 25 kHz spacing. Sorry about that Chief, would you believe a typographical error?

No! How about line noise?

GOODS NEWS FROM OS

I reported in the July/August issue, the events that were occuring in the US regarding the FCC removal of public safety bands from scanning receivers. Well, American scanner enthusiasts are breathing a collective sigh of relief, it appears that scanners are not the target of ANY action by the FCC or anyone else. For some time transceivers capable of being programmed in the field have been prohibited in the US, (as at 1 July 1991, they are no longer type approved in Australia either).

The problem of pirating and unauthorised transmissions being the reasons. Which brings me back to the FCC ban. It appears they are targetting amateur radios that can transmit and receive outside the designated ham bands. They are requiring the removal of public service bands from these radios only, NOT SCANNERS. There is no hidden agenda. The FCC consider scanners to be the least of their worries.

NEW PRODUCTS

Allan Muddle, PO Box 50 Dungog, NSW 2420, is now making a stronger carrycase for the RR 477 UHF handheld. He has also put together a Frequency File for those large capacity scanners such as the PRO 2004/5/6.

For $9.95 plus post and pack, the channel organiser allows easy and immediate access to those busy channels. Any enquiries should be directed to the above address.

That's it folks, please if you require a personal reply, enclose a stamped self addressed envelope with your question. If it takes me a while to reply please bear with me. Domestic circumstances take priority.
he address is;

SCAN
PO BOX R 16,
ROSELANDS ,
NSW 2196

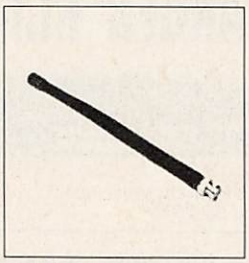
Improve Your Scanning Coverage!

GRE America is proud to introduce a new family of products to enhance your scanning pleasure! First, GRE has designed the new **Super Converter 9001** for base model scanners. The 9001 converts 810 MHz - 950 MHz down to 410 MHz - 550 MHz. The 9001 is the perfect alternative to buying a new, expensive scanner covering the 800 MHz band. Next, GRE announces the new **Super Amplifier 3001** for base model scanners. The 3001 will increase gain by as much as 20 dB, and is engineered to help scanners with low sensitivity pull in weak signals. Both products use BNC connectors, (1) 9 volt battery and have an off/pass switch for returning to normal operation.

Super Converter 9001 & Super Amplifier 3001

Super Converter II

Super Amplifier


All-Band Antenna

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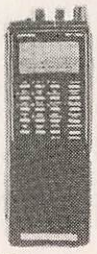

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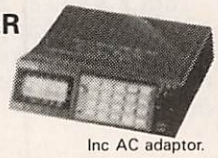

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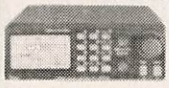

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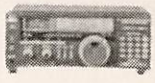

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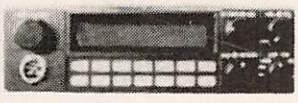

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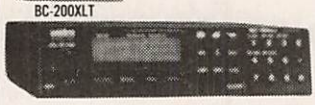

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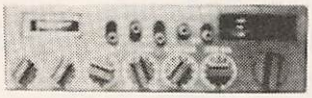

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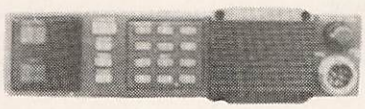

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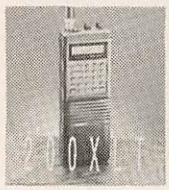

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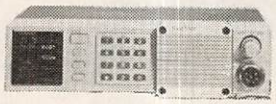

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Here's an antenna you can build at home...

THE D-I-Y DISCONE

In our last issue we had an article about discone antennas and their suitability for a range of frequencies. This time around, and as an immediate response to our recent survey which indicated that readers want do-it-yourself projects of a relatively simple nature, we have a d-i-y discone - relatively easily built, relatively low in cost but somewhat more than just relatively effective in operation - try it.

The discone is a rather odd looking antenna but one which has many advantages - especially at VHF and UHF levels. Perhaps its greatest advantage is that it can present close to a 50 ohm load over a very wide frequency range. In this respect it is far different to the usual ground plane which must be carefully resonated and matched to ensure worthwhile results. Like the ground plane the discone is an "all round looker" so it has a lot going for it when an omnidirectional antenna is called for.

But the advantages of the discone in terms of easy matching, wide frequency range and omnidirectional capabilities do "cost". The two "costs" are that it does require a little "home engineering" capability to construct and the transmitter must have a very, very clean transmitted signal.

Unlike the usual narrow band antennae such as the ground plane or the dipole which are, in effect, tuned circuits and thus have some ability to filter out harmonics - the discone, with its wide frequency coverage, will just as readily radiate harmonics as the fundamental. A low pass or band pass filter in the feed line is thus mandatory.

Figure 1 shows the general form of the discone. Essentially it consists of a top disc which is attached to the centre of the co-ax feed line and a cone-shaped skirt is attached to the outer of the co-ax. Disc and skirt are separated by an insulating bush.

The discone operates as a taper transformer whose job is to match the 50 ohm feed to 377 ohms. This latter figure is regarded as the nominal impedance of free space. Any antenna does just the same thing but over a very narrow frequency range. Usually a conventional antenna (ground plane, whip, dipole or beam) is designed for optimum operation at just one frequency, although of course it operates above and below the optimum frequency at a slightly degraded level. If, however, there is a large departure from that design frequency the impedance rises very quickly and mismatch occurs. In short the SWR goes up to blazes.

The discone is so designed that the impedance at the apex of the cone is 50 ohms and increases to a very high figure at the bottom of the cone. With a given frequency fed to the discone, the wave travels down the cone until it finds a point which - at the feed frequency - looks like 377 ohms. At that point the wave leaves the antenna and heads off into the wild blue yonder.

A little thought will show that at some frequency or other the 377 ohm point is right at the bottom of the cone. This frequency is the cut off frequency of the

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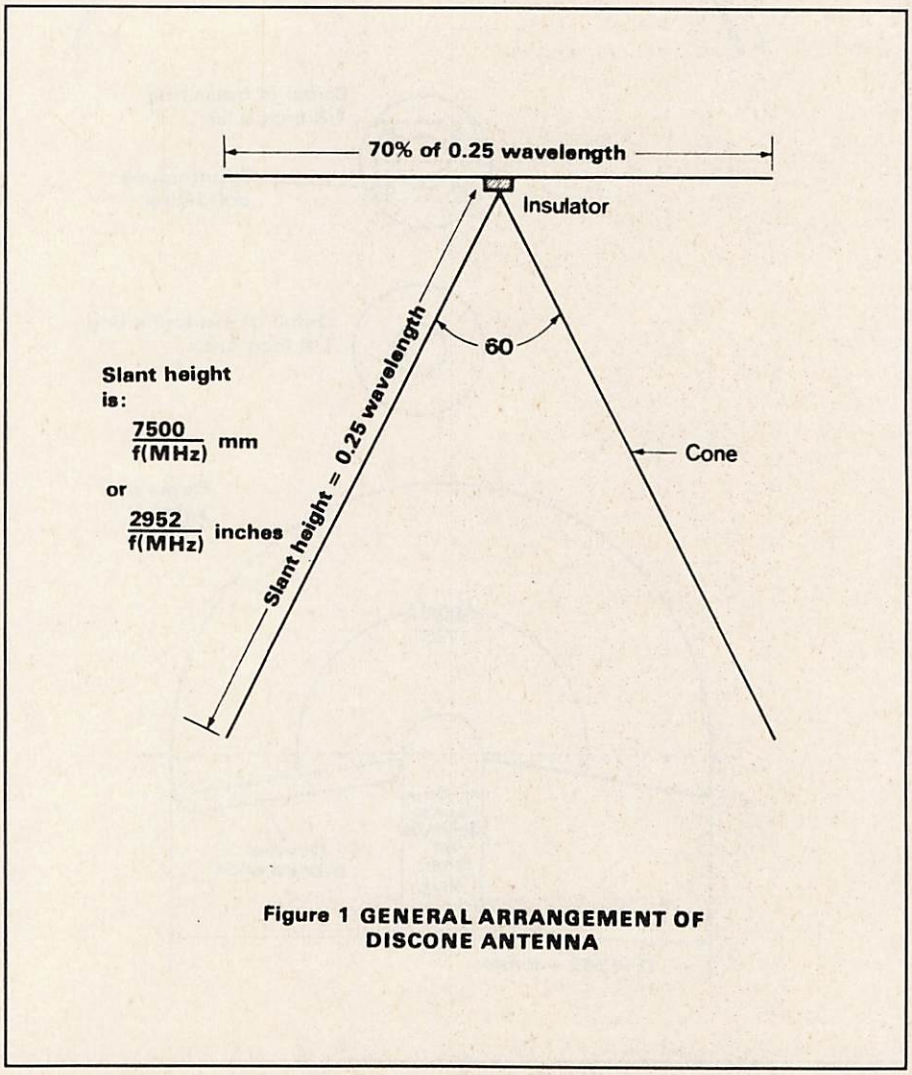
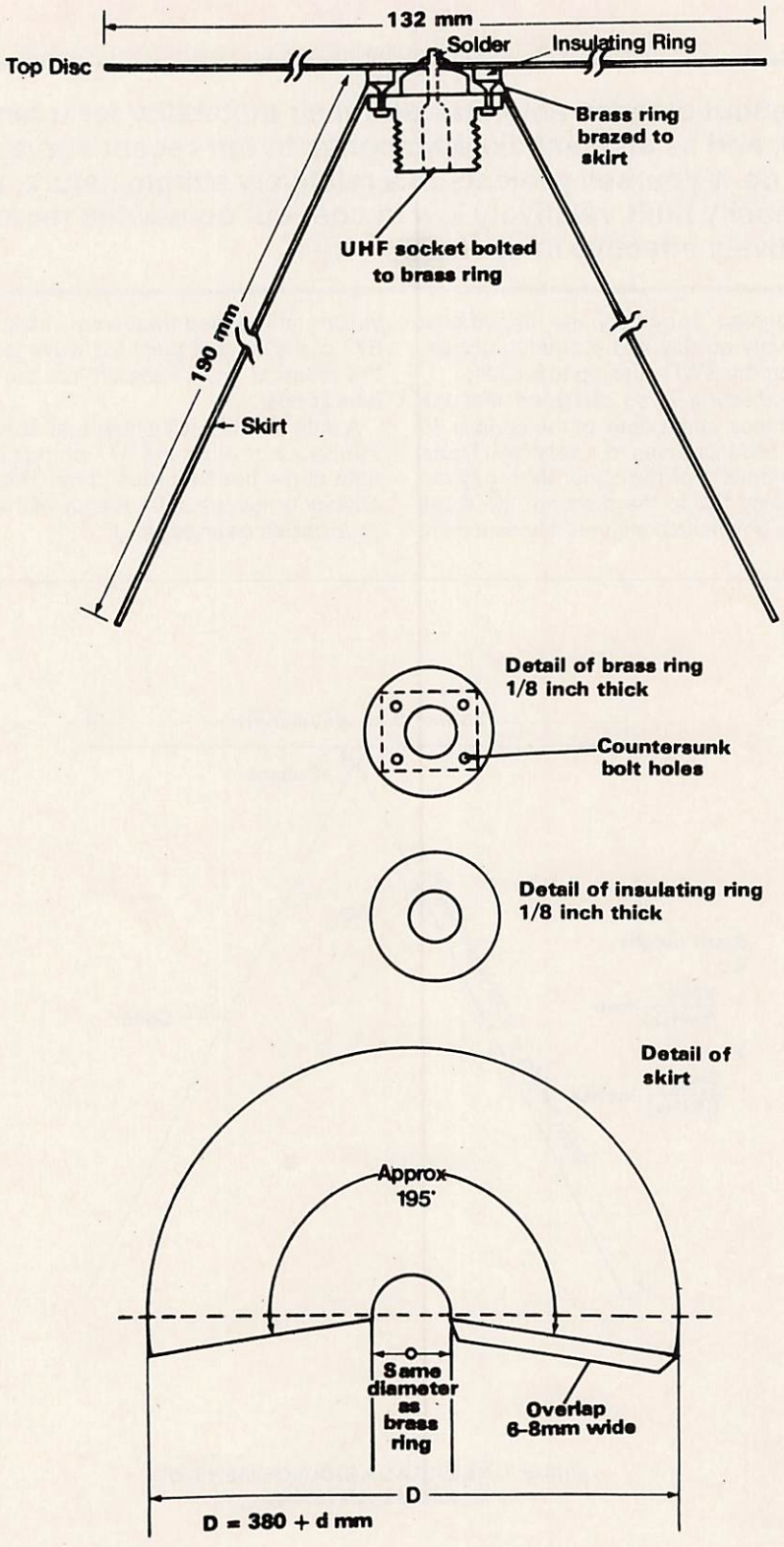


Figure 1 GENERAL ARRANGEMENT OF DISCONE ANTENNA

THE D-I-Y DISCONE

Figure 2

CONSTRUCTION DETAIL



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device and occurs when the slant length of the cone is 0.25 wavelengths long.

The upper frequency limit of the discone is set by the physical dimensions of the discone interface. If this could be made a single sharp point the upper frequency limit would be infinitely high. Since this is not physically possible all that can be done is to engineer the feed point so that the top diameter of the cone is as small as possible.

The diameter of the disc is not particularly critical and is usually made 0.17 - 0.175 of a wavelength in diameter at the lowest frequency of operation. That is - the disc diameter is 70 per cent of the slant height.

The angle between the disc and the cone sets the feed impedance of the discone. When this angle is 60 degrees the feed impedance is 50 ohms (remember the old trick of dropping the radials of a ground plane to give a good match to 50 ohms - same sort of thing here).

To design a discone for the UHF band some assumptions must be made and a little simple maths employed.

The assumptions concern the cut off frequency to be adopted and the size of co-ax to be used. For the UHF band a L.F cut off of 400 MHz is appropriate. At 400 MHz the device is quite small and it is pointless to reduce the cut off any further as it only makes the thing bigger and does nothing to improve reception or transmission. The size of the co-ax to be used is also important. At UHF the usual 27 MHz type co-ax is bad news. At 450 MHz it's losses are so great that with, say a 15 metre (50 ft) run from base station to antenna most of the RF will have been lost by the time it gets to the antenna. It is therefore strongly recommended that a high quality co-ax be used. It will of course cost more but nothing comes for free! Top quality coax will have minimum losses of around 5 dB/30.7m (100 ft) at 430 MHz. For the average 15 metre (50 ft) run the loss will be about 2-2.5dB. This means that only slightly more than half the transmitter output power will reach the antenna. Having made these two assumptions it remains to work out the dimensions.

A quarter wave in millimetres is given by the formula: 75000 divided by f(MHz) Thus for a cut off frequency of 400 MHz a 1/4 wave will be: 75000 divided by 400 = 187.5 mm. The diameter of the top disc will be 70% of this or 131.25mm.

Because of the insensitivity of the discone to frequency we can round off these

two figures to 190mm and 132mm respectively. If your brain is still calibrated in inches then 7 1/2" and 5 1/4" will do.

Figure 2 give constructional details.

The antenna is built around a UHF socket. First a 3mm thick brass disc is required with a diameter slightly greater than the diagonal distance across the mounting flange of the socket. Around about 32mm should be OK but check with the socket you intend to use.

A hole is bored in the centre of the disc to clear the raised portion on the back of the socket. About 16mm in diameter is the aiming point but, again, check with the actual socket used. Four 3mm (1/8") holes are then drilled in the disc for the nuts and bolts required to clamp the disc to the socket. These holes are countersunk on the one face of the brass disc.

The insulating washer between the socket assembly and the top disc is made from teflon or other suitable insulator material. It should be the same diameter (or slightly greater) than the brass disc and about 3 mm (1/8") thick. The determining factor here is the weathering characteristics of the insulator. It must of course be fairly stiff and not "flow" at high ambient temperatures.

The skirt and disc are made from thin flashing copper. The skirt is cut as shown in **Figure 2** and bent round to form the required cone shape. The top edge is soldered or brazed to the brass disc and then the overlap on the skirt brazed or soldered. After joining, file the top surface of the assembly flat, then bolt the socket to the brass disc.

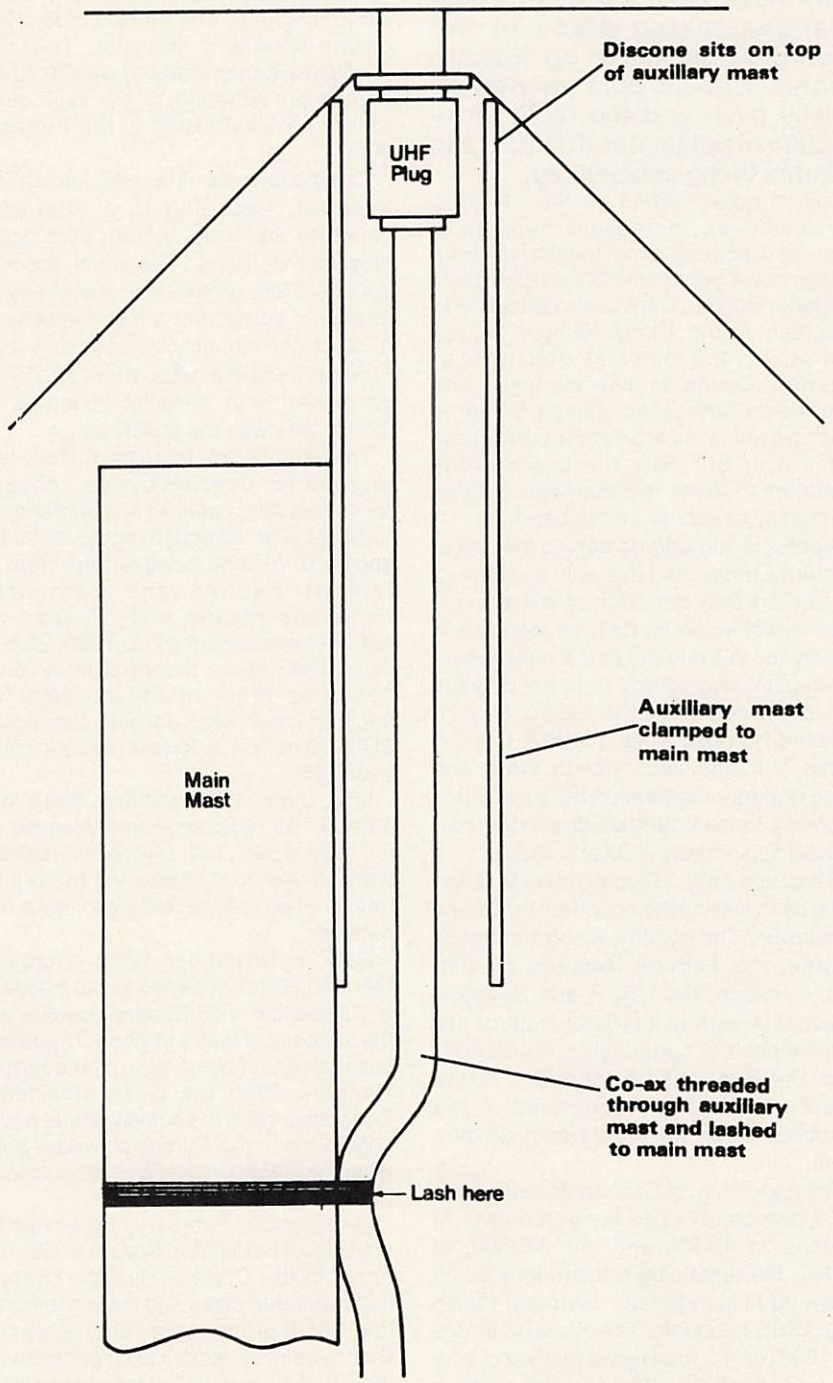
The top assembly is a simple disc of flashing copper with a hole drilled in the exact centre. The diameter of this hole is such as to be a tight fit on the solder pin on the back of the socket.

Assembly is completed by putting the insulating washer in place, pushing the top disc firmly over the socket pin and, whilst holding the whole thing firmly clamped together, the socket pin is soldered to the top disc. If after assembly, the top disc is a bit wobbly, a judicious application of epoxy cement will put things right and make things tight and waterproof. A spot of paint over the soldered joint will prevent subsequent corrosion.

Figure 3 shows how the antenna can be fixed in place. The co-ax feed line is threaded through a short (30 cm or so) length of 25mm (1") diameter tube which is clamped to the main mast. The antenna sits on top of this auxiliary tube. The finish assembly can be given a coat of paint if required. When in place it is very inconspicuous. As a bonus, this discone will make a very reasonable UHF receiving antenna for scanner operators who might care to experiment with it and optimise it to their own requirements.

Figure 3

ANTENNA MOUNTING DETAIL


Discone sits on top of auxiliary mast
UHF Plug
Auxiliary mast clamped to main mast
Main Mast
Co-ax threaded through auxiliary mast and lashed to main mast
Lash here

Jack Haden reports on a ....

DXpedition TO CZECHOSLAVAKIA

Over the past 18 months or so there have been many sweeping changes taking place in the countries that make up Eastern Europe. With the cold war now officially over, and the rapid introduction of political and democratic reforms being established,

This is quite evident on the 11-metre band with an increasing number of operators coming onto the bands from places never heard only three years back; Bulgaria, Poland, Czechoslovakia, and to a certain extent Romania have all appeared on the band at one time or another. Countries like Hungary and Yugoslavia have been with us for some time now and were at one time considered semi-rare, but now there are many operators in these two countries making them easy to secure on the band.

Albania is still lagging behind the rest of Eastern Europe and it is only a matter of time before they too catch up with the rest and we will no doubt hear an increase in activity for this country in the near future. As we all know, activity from not only the European sector of the USSR has increased but also Asiatic USSR has followed suit and each month more and more operators appear on the bands thus knocking these countries down the most wanted list in many a DXer's shack.

Geographically, Czechoslovakia is the most central of all the countries that make up Europe. The country is surrounded by Austria, the Federal Republic of Germany, Poland, the USSR and Hungary. Czechoslovakia is a federal state of two nations each of equal rights, the Czechs and the Slovaks (hence the name Czechoslovakia) and composed of two republics, each having its own government.

The population of Czechoslovakia in the 1987 census revealed the percentage of Czechs at 62.9% and the Slovaks at 31.8%, the remaining percentages being made up of Hungarians, German, Polish and USSR nationals. The official estimate for 1988 put the total figure for the country of around 15,624,254 in total, with a population density of 122.2 people per square kilometre at 1988 figures.

The official languages are of course Czech and Slovak, members of the West Slovonic group, and there is also a Hungarian-speaking minority. The main religion is Roman Catholic with 70% of the population adhering to the faith and a further 15% belonging to the Protestant faith.

Czechoslovakia is a well known beer exporter, exporting to a total of 70 countries and is the world's third biggest producer of hops. The most important source of foreign export is machinery and transport equipment which represented 47% of the country's exports in 1988. Foreign trade statistics show 79.1% was conducted with socialist countries and 32.4% was with the USSR alone.

Tourism is an important source of revenue for Czechoslovakia, renowned for its beautiful scenery and winter sports facilities. The capital, Prague, is the best known of historic cities where there are famous castles and cathedrals, numerous resorts and 57 spas with natural mineral springs. In 1988, 25.5 million visitors were recorded from foreign countries (95% of these came from socialist countries) earning the country $US200 million in tourist revenue for the year 1988.

In a June 1989 survey, there were 14,699,185 radio receivers licensed and in 1986 4,387,144 television receivers were in use. It is interesting to note that one must possess a license to use a radio receiver.

Back in November 1990, a group of German DXers volleyed about an idea of a DXpedition into Czechoslovakia after the success of their previous DXpeditions into then East Germany, Luxembourg and Hungary. With the close proximity of Czechoslovakia the activity would have to take place in the European winter period when propagation is at its best, especially to the US and Asia.

On 23 and 24 February, three members of the 13-AT-000 Club Station in Germany drove to the Czechoslovakian border to find a suitable place and test conditions of the band propagation characteristics. Before gaining access to Czechoslovakia they had to queue for two hours at the border control post before having their passports checked and equipment cleared for entry.

Once admitted they drove about looking for an ideal hilltop operating post so they could make some on-air band propagation observations. It was only a small matter of time when they had quite a pile-up of stations calling them when it was learnt that they were in fact operating from Czechoslovakia. With everyone virtually pleading for a QSL card it was then decided that a few lucky stations would be put through and entered in the logs. The team now relaxed, as they had their equipment admitted into Czechoslovakia, then decided it was time to look for a more suitable DXing spot and track down some suitable accommodation nearby.

With so many spots and small hotels to choose from it was decided by the team that they would compile a list of options, return to Germany and then decide on what plans were to be made, as the "test-run" into Czechoslovakia proved successful concrete planning could now be carried out.

It was decided back at the 13-AT-000 Clubrooms at Roth, that they return to Czechoslovakia again in the first week of March 1991 and permission was granted for them to sign as 179/13-AT-000 portable Czechoslovakia. The team of operators selected to go comprised of: 13-AT-174 Mike, 13-AT-202 Bert, 13-AT-265 Jurgen, 13-AT-294 Marcus, 13-At-341 Ken and 46-AT-104 Joe. It was also decided that the QSL route would be via the 13-AT-000 Club in the Federal Republic of Germany.

Prior to departing, there were inevitable equipment checks and rechecks, along with the continual observation of the propagation pattern. A design was then worked out for the official QSL card to be issued with a three-color glossy phototype QSL winning the vote, although somewhat expensive it was decided that this card should be printed and some quotes be obtained.

The excited team decided to depart Germany on Friday, 8 March 1991, with the destination of Cheb (Eger) in Czechoslovakia in mind. After a long drive of some three hours (with a two-hour wait at the border) the team arrived at Cheb. After checking into a modest hotel with meals and drink included in the price the excited DXpeditioners then went by car to

the planned operating location on a hilltop near Cheb.

Quite a lot of hard work was involved in setting up the station, but as the saying goes, more hands make light work! The station was up and running soon after lunch with quite a pile-up of DXers waiting for them to appear on air signing as 179/13-AT-000 portable. Propagation on the band was most reasonable and being multi-operator the station was on-air for long periods without any breaks.

588 CONTACTS IN OVER 60 COUNTRIES

At the closing down time on Sunday afternoon, 10 March, there was a total of 588 contacts established in over 60 DXCC countries, quite a good effort which gave many DXers the opportunity to work Czechoslovakia for the very first time on 11 metres. After closing down came the arduous task of taking down the half-wave groundplane which was up at 10 metres and the four-element yagi which was mounted at seven metres in height. The Kenwood TS-440S radio was carefully packed away along with the Heathkit SB-200 linear which gave them a good reliable 500 watts output for the duration of the DXpedition.

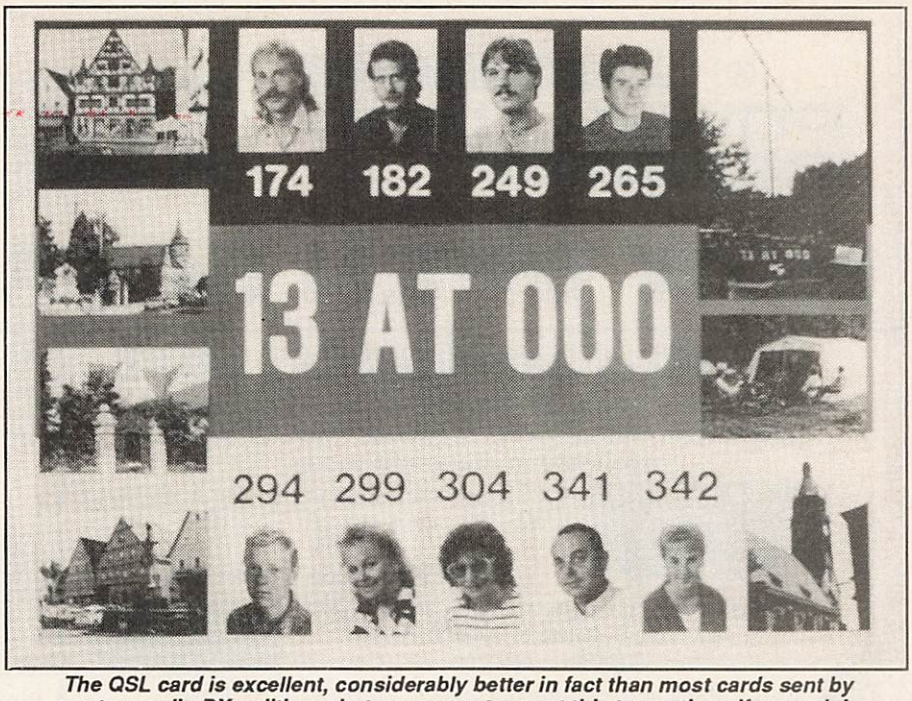
At the conclusion of the operation, the Dxers were not very happy about some of the conduct displayed by those in the pile-ups, some fools made three or four contacts with progressive numbers (duplicates) and thus, in their greed, did in fact prevent some others from making it through for a new one. Also some concern was expressed by the team about the amount of "lids" who kept tuning up on the frequency, some for a period of 30 minutes or more. Mention was made about the poor operating techniques of many Alfa Tango members who had no idea at all of how to work a DXpedition properly and thus created a lot of interference for the operation and generally wasted the DXpedition's time as a result.

I myself have also noticed this problem while monitoring DXpeditions over the past year or so.

The once good standards of the Alfa Tango group are slipping very fast and there are more and more "sub-standard" operators being admitted to the group, most likely to boost membership numbers.

RETURN POSTAGE IS A MUST!

After their return to Germany the team found, to their disappointment, that out of all the QSL cards sent to them for the Cechoslovakian operation only a mere 50% bothered to include some form of return postage to assist them in mailing



The QSL card is excellent, considerably better in fact than most cards sent by amateur radio DXpeditions, but you cannot expect this to continue if no cash is included with your request for a card.

costs, not to mention the expense of the actual printing of the QSL cards to confirm the DXpedition. This in turn has put a damper on their plans to perhaps return to Czechoslovakia or other countries in the future.

The costs of printing special QSL cards and photographs is not cheap, I myself have been there and done that on many occasions so I can only share their disappointment.

The group has stated that it will be the last time that they will go to so much trouble to highlight a DXpedition and that next time, if there is one, they will only send out a simple black and white photostatic card to those who fail to send any form of contribution with their cards.

Personally, I think they should adopt the "no return postage, no QSL issued" policy which seems most fair to me.

As the team quoted on their letter: "Operators who have made an expedition will know about that problem. We are not millionaires!

We hope you understand us." Many DXers can take a lesson from this, if the trend continues then the end result will be that DXpeditions will decline as people have second thoughts about absorbing all the costs.

It is not as if the almighty AT group in Asti is footing the bill, quite the contrary, it is the DXers themselves who pay out of their own pockets to help give you that much needed new country.

The team would also especially like to thank the 31-AT-331 in Portugal who helped them with some contacts, and of course all the good DXers who kept the contacts short and included return postage etc with their QSL cards.

On behalf of CBA I would like to thank the 13-AT-341 for the wealth of information that made this article possible.

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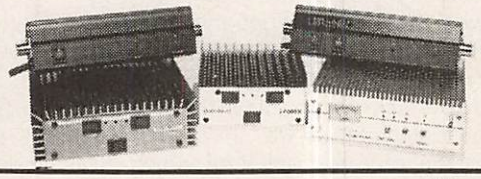

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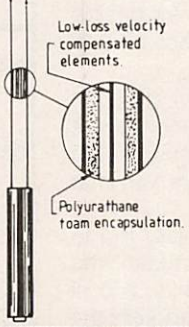

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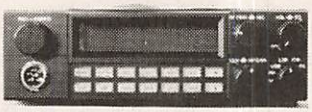

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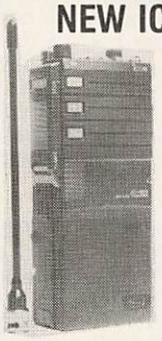

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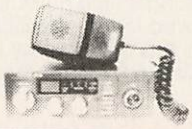

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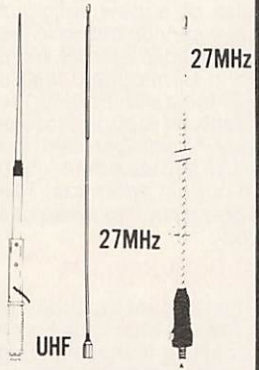

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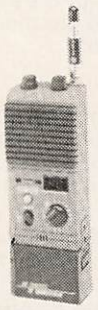

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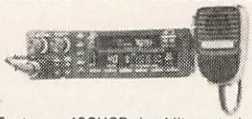

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dxlogbook

with Rob Williams

WHAT'S HAPPENING IN THE WORLD OF SHORT WAVE RADIO...

Well, here we are again, with another roundup of news and events for the shortwave DXer. As always, all times are in UTC/GMT and all frequencies are expressed in kilohertz.

☐ New Broadcasts From The Philippines

The big news this issue is Radio Philippinas, the new shortwave service from the Philippines. Broadcasting from VOA's tx site at Tinang it is on the air from 0230 to 0330 on 17760, 17840 and 21580. Another transmission goes out between 1800-1900 on 15190, 17840 and 21455. Local reception is best around 0230 on 21580 and 17840. An address for reception reports is given during programs. It has been suggested that this station was a political move by the US to assist its case for a renewed lease of military bases, due to expire in mid-September, so this station may not be around for too long. Thanks to Media Network for the original announcement of this station.

☐ Another Religious Broadcaster

Renowned DXpert Tom Sundstrom reports in the computer network's International Shortwave Echo of a new religious broadcaster planning to set up a shortwave service based in the US. Called EWTN and run by the Roman Catholic Eternal Word TV network, the station is to be set up in Birmingham with a planned coverage of everywhere except India, China and the eastern USSR. Further to this, Media Network reports that the construction permit is expected in early November and the station will take two years to build. The site will include 4 x 500 kW transmitters feeding directional TCI curtain antennas. Ted Turner, one of EWTN's backers, will no doubt want to make use of the facilities for use by his own network.

☐ US Questions Its International Broadcasters

Talks have already commenced in the US over the future of government shortwave broadcasting. A Presidential Task Force on US Government International Broadcasting is investigating the direction that its own shortwave broadcasters must take, given the world's changing political scene. Once more, a report from the International Shortwave Echo (a real mine of information these days) by Robert Horvitz says that the Task Force will be examining three main issues: the "most appropriate organization and structure" under which all US Government international broadcasters might eventually be consolidated into a single broadcasting entity; "strategies for the best use of new technologies"; and the relationship between US Government broadcasting activities and US private sector broadcasting enterprises in the international arena."

Henry Catto, the new director of the US Information Agency (VOA's parent body), has already argued against "privatizing" VOA or recreating it as an agency or public corporation separate from the USIA. VOA staff have compiled figures on the comparative cost of an hour of broadcasting by various Government-run shortwave stations. These include the estimate of a single hour of VOA air-time costing $3051, with Radio Free Europe/Radio Liberty at $3228, the BBC at $4703 and Deutsche Welle an astounding $7360.

☐ News From Our Kiwi Friends

Radio New Zealand has introduced a new schedule for 1/9/91 to 1/3/92: from 1800-2200 Sundays to Fridays on 15120; 2206-0730 daily on 17770; and 0730-1210 on 9700 daily. Transmissions past 1210 will cover national and international sporting events, to be broadcast on 9700.

Two new programs join the RNZ line-up... Pacific Beat, which features the latest pop records from NZ and the Pacific Islands, will be aired at 0810 on Tuesdays and Fridays. People From Our Past, a look at NZ history, is heard at 2020 on Sundays and Thursdays. There will also be a pilot series titled "Calling Japan" broadcast until 17/11 on Saturdays and Sundays at 1100 on 9700. The program will include news, interviews, NZ and Pacific music and feature segments. Tony King's popular Mailbag goes out every second week on Monday at 0430, Thursday at 0830 and Friday at 1930. ***Reception reports should be directed to Radio New Zealand, PO Box 2092, Wellington NZ.*** Thanks to CSM's Ed Evans for this info.

☐ Coming Soon - Radio Free China?

Two US senators have proposed convening a committee to look at establishing a shortwave station targetting China, along the lines of Radio Free Europe/Radio Liberty. Supporters of the concept are calling the station Radio Free China. The committee will examine the costs, benefits and ramifications of such a station. Chinese officials in Washington have already stated they have "grave concern and strong indignation" towards the proposal. However there are many who feel that rather than establish a new station, the existing facilities of VOA should be used and enhanced. VOA already reaches tens of millions of Chinese listeners. Another question being asked is: Are American journalists the best people to report on changes in China?

In 1990 attempts by dissidents to broadcast from a radio ship in international waters off China led the Chinese government to warn other nations that any support for the project would be considered a hostile act and implied that force may be used to stop the station. The project failed soon after. The report is expected to be sent to Congress by the end of the year, but even if such a station ever gets off the ground it would take a year or two before RFC hits the airwaves.

☐ Books for DXers

Radio Netherlands has just released the latest edition of "The Booklist", 45 pages covering books, magazines and other references for novice and advanced, specialist DXers alike. Using the latest DTP facilities Jonathan Marks has produced a superb publication covering all aspects of radio communications, from shortwave radio to related fields including amateur radio and antique receivers. Another name for this booklet could be "Books Galore", because that's what you get from The Booklist. I strongly recommend you obtain a copy, which is free for the asking, from Radio Netherlands, PO Box 222 1200JG Hilversum, The Netherlands.

Also from RN is a very useful publication for those who send out reception reports. Getting a fully verified QSL card these days requires more effort. With many stations now issuing "no detail" QSL cards you need to show stations you can offer them some information about their signal and program which they can't get from other sources. Knowing what to include and what to say increases your chances. RN's "Writing Useful Reception Reports" maximises your chances of getting that QSL... and remember, a QSL card is a privilege not a right. This booklet is also available free from RN.

☐ A New Monitoring Group?

Shortwave enthusiasts in WA are discussing the establishment of a new monitoring group for shortwave and HF enthusiasts. The Australian Group of Radio Monitors (AGRM) first plans to start a monthly newsletter with news on MW, SW, LW, FM, utes, clandestines and pirate radio. Also included will be tips on QSLs, propagation, antennas and computers. All this should make the newsletter a very comprehensive publication. As Australia already has three DX clubs it will be interesting to see if the DX population can support another group. For further information on the AGRM write to ***David Hossack, 28 Weston Way, Kardinya WA 6163.***

☐ Red Cross

Until February 1992 the Red Cross Broadcasting Service (RCBS) has English broadcasts to Australasia at 0740-0757 on 9560, 13685, 17670 and 21695, with another from a Beijing transmitter at 1310 to 1327 on 7480. Broadcasts to the Far East in English are aired between 1040 and 1057 on 13635, 15505, 17670 and 21770; and to South and South East Asia between 1310 and 1327 on 11690 (via Beijing), 13685, 15505, 17830 and 21695. All broadcasts mentioned are aired on the following dates: Monday 25/11, 30/12, 27/01 and 24/02; and Thursday 28/11, 02/01, 30/01 and 27/02.

☐ DX Notes

Radio Sweden's informative and ever-popular DX program Sweden Calling DXers (SCDX) can now be heard in the Asia/Pacific region on the second and fourth Tuesday of each month. Tune to Radio Sweden's half-hour English broadcast at 1330 on 17740 and 21570, with a repeat at 0100 on 9765. These days SCDX also includes a large content on satellite and non-shortwave media events.

The latest from Radio Norway can be heard Down Under at 1200 on 25730 and 21695.

As the merger of East and West Germany continues apace there are still plenty of changes happening in the new nation. You can easily keep up with the news by tuning to Deutsche Welle's daily broadcasts to Australia. Try 2100-2150 on 6185, 9670, 9765, 11785 and 15350; and 0900-0950 on 6160, 11915, 17780, 17820, 21465, 21650 and 21680.

The wide-reaching Christian Science Monitor network has issued a new sked effective until till 29/3/92. WSHB broadcasts to Australia and Oceania from 0800-1000 on 13760; and try KHBI between 0800-1000 on 13710, 1200-1400 on 13710 and 1800-2200 on 13625.

Our time for DX tips has run out... so keep twiddling those dials and I'll catch up with you again in the next issue.

If you wish to contact me, write to; PO Box 108 Minto NSW 2566 enclosing an SSAE for reply.

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EVOLUTION OF A SPECIES

by Ken Reynolds - Power Band Communications

A BRIEF HISTORY

PHILLIPS TMC breathed life into the Australian UHF CRS (Citizens Radio Service) back in 1977 with the introduction of a uniquely Australian, 40 channel UHF transceiver especially designed for the new UHF Citizen Band - introduced by the then P&T (Post and Telegraphs Department) which later became the DOC (Department of Communications) and today is named The Department of Transport and Communications. The FM-320, as the radio was designated, operated on a band totally new to the CRS and used Frequency Modulation in preference to the AM/SSB modes favoured for the older 27MHz band which simply refused to die, even under the command of the P&T Dept. which insisted that the old band (27MHz) would no longer exist and that all illegal operators would transfer to UHF or else...!

There was no market opposition to the Philips product at that time and if you wanted to operate on UHF CB the only choice was an FM-320 transceiver.

The problem was, however, that very few operators moved to the new band and 27MHz raged ahead as never before with the UHF band being sparsely populated for several years. The regulations imposed by the Department were absurd, to say the least, with some 'bright spark' over-regulating the band to the tune of banning radio waves from travelling more than 32 km. In other words, operators were not permitted to converse over greater distances than 32 kilometres and the use of beams was also illegal. Some start for a UHF band?

UHF was neglected by most until Philips TMC negotiated some sense into the P&T bureaucrats and in an unprecedented move, the UHF CRS band exploded into life with the introduction of the world's first CBRS repeater station. The day the experimental repeater came on air it was so new that most of the Departmental staff were ignorant of its existence, so much so that a well known Radio Inspector (now retired) spend much of the evening trying to locate the damnation and to suitably chastise those who would so flagrantly flaunt the law.

So, channel 1 repeater, Melbourne was born using a channel split of 1 and 39, the latter being the input channel. Existing FM-320s were not equipped for repeater use and the Philips' tech staff were quick to publicise the small modification required to update the rig for repeater operation.

The temporary, experimental repeater was located at one of Philips commercial group sites in Lysterfield and it extended the coverage of Melbourne's UHF CB system to the whole metro area and also into the near country areas for up to about 100km.

In a world recently conscious of its environment and the frequent extinction a whole species; here is the story of the first of its kind,which was believed to have died out in the past couple of years but is in fact alive and better than ever.

Of course the regulation book cited the maximum range as 32 kilometres.....but by this stage I think the P&T Dept viewed the regulation with the same humour as the rest of the radio world. Banning the range of radio waves is a bit like banning gravity...if you really are God you can probably do it.

After the experimental term had expired the Department in a burst of co-operation agreed to license a whole range of repeaters throughout the country of which I am proud to say that MEL 07 sited at Frankston and owned by yours truly was the very first.

Philips quickly turned their attention to an up-date kit which would extend the facilities of existing FM-320s to cover the new repeater band plan which consisted of 8 repeater channels, each having a 30 channel split between transmit and receive ...e.g. Rx Chl & Tx Ch31.

By now all new FM-320 transceivers were rolling off the assembly time complete with repeater offset facilities as were the glut of new competitive brands including Electrophone, Uniden and Sawtron.

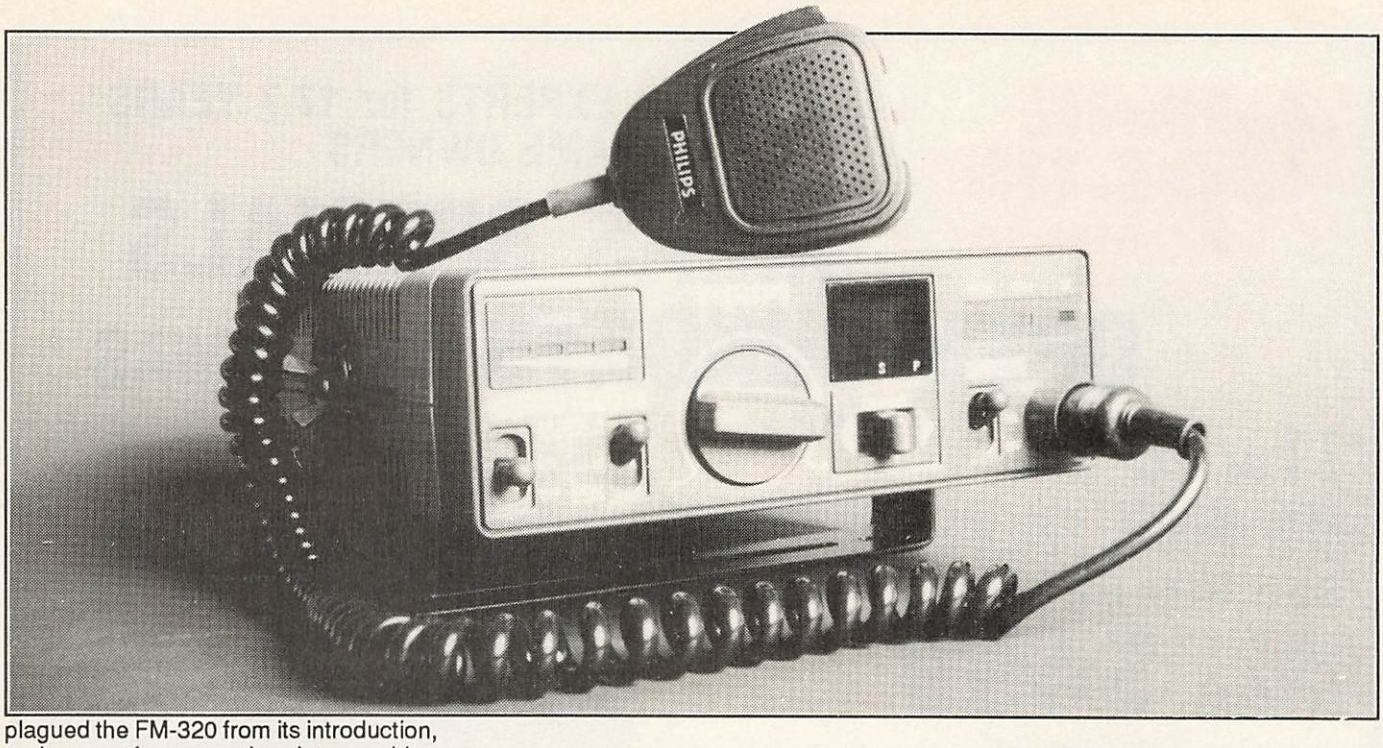
THE UHF CB BOOM HAD BEGUN

Within a couple of years UHF CB had really taken off and new repeater stations were distributed far and wide across Australia.

Because of the ageing Philips design - after all the FM320 was a big gamble for Philips which put up front a couple of million dollars to design a UHF CB radio that had no past and almost had no future - most of the foreign built competitors were seriously out-performing the FM-320.

The design was updated and improved several times until the new FM-620 was finally released sporting a similar case and control panel as its predecessor, however, this time a basic scanning facility had been added to enhance the desirability of owning one of these new Australian designed and manufactured transceivers.

Added to the line up of features was a completely redesigned receiver that offered some of the tightest specs of any existing UHF CB rig....its main advantages were improved sensitivity and a huge improvement in 'out of band' signal rejection, a problem that seriously



plagued the FM-320 from its introduction, and, even after several updates and improved receiver filtering still persisted until the new model arrived.

New rig looks almost identical to FM620, however, it incorporates many new features and continues to be a very desirable piece of equipment. It's a pity that this evolution does not include an updated antenna connection socket.

OUT OF BAND INTERFERENCE PROBLEM WAS SOLVED

The ability of the FM-620 to exclude most out of band interference was well demonstrated at a friend's business premises in Richmond, a close-in suburb of Melbourne. The area is heavily RF polluted and it had been almost impossible to use any brand of UHF CB at the site without suffering serious receiver interference. Every CB rig available was tried, including a couple of commercial rigs, but to no avail. When the FM-620 was released a unit was installed at the site and to our amazement the station has never suffered from "calling all cars" again.

The FM-620 has competed VERY successfully with all other brands for some years now and has certainly cast off the old stigma that has unfairly haunted the Philips' product from the early days.

In recent times Philips has suffered from huge internal problems and heavy pressure brought about by the recessed economy that has seen its Melbourne manufacturing operation - that produced the commercial, UHF CB and cellular telephone - almost brought to a standstill, with some of its property and plant sold off at auction.

The PRM-80 commercial transceiver is the only remaining rig manufactured at the Clayton near Melbourne plant - this is a 'Surface Mount' assembly line which employs 'Robots' for nearly all operations.

It appeared that the last Philips CB radio had rolled off the production line and that the marque was now extinct. Even so, there were rumours that a new rig was on the way and we (well I did anyway) already knew that the FM-620 had been revamped several years ago, but, probably because of Philips getting their priorities in order the FM-650SD release had been postponed until now. In fact, the new rig release is planned for early in October this year.

It is worth looking at the background that has preceded the release of the new Philips FM-650SD because it shares so much with its most recent predecessor that the rigs are identical in many respects - except for the new features offered by the 650 that bring it right up to date with its competitors in the race for your UHF CB dollar.

It is widely known that Philips transceivers are difficult to beat for quality of transmitted and received audio and that their transmitters are always very clean in regard to spurious and harmonic content - Philips have always been very conscious of their public image in this respect and this pride is reflected in their attention to technical detail.

Sadly, the FM-650SD is being manufactured off-shore in Taiwan because of the crippling costs of manufacture in Australia.

THE NEW FEATURES

The FM-650SD - the 'SD' is bound to be dropped in conversation - retains all the old FM-620 features including the physical layout of the case and front control panel. Added functions that have been integrated through redesignation of the old control lever switches are programmable scan groups 1 and 2 plus the addition of a Dual Watch function that is an extension of the old 'Nominated' function that appeared even on the oldest FM-320, but it has been enhanced to provide a type of *PRIORITY* monitoring facility.

USER PROGRAMMABLE SCAN GROUPS

The 650 has two scan groups which are user programmable via the front panel controls, however, some operators might find their brain box stretched a bit to grasp the way in which they operate. To stay with me at this point you will need to look at the photo of the control panel to easily understand the way the switch functions are delegated.

From left to right the switch controls are *MUTE - SCAN - CHANNEL* - and *MODE*. You will notice to the immediate left of *CHANNEL* switch there is an arrow with a '-' designation and on the right a similar arrow containing a '+' sign. Immediately above the *CHANNEL* switch in the channel display windows are the letters 'S' and 'P'. The 'S' stands for Scan and when a high intensity 'dot' associated with it is illuminated, the displayed channel is included in the scan group '1' or '2' as indicated by the position of the switch labelled *SCAN* - second switch from the left.

(continued over page....)

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Continued from previous page.....

(cTo *ADD* or *DEL*ete a channel from the current scan group the *MUTE* switch must be raised to the upper position labelled *ADD/DEL* and by moving the *CHANNEL* selector switch to the left or right respectively the channel displayed will be wither *DEL*eted or *ADD*ed to the group. You may have as many or as few channels in the group as you wish.

If you wish to include the displayed channel in the scan group but you would like it to be a *PRIORITY* channel the procedure is:- move the *CHANNEL* switch to the '+' direction once to illuminate the 'S' for *SCAN LED* and a second time to the '+' position which will cause the 'S' LED to extinguish and the 'P' for *PRIORITY* LED to illuminate. Clear as mud eh?

Having completed *WRITING* your scan group into the selected scan group memory, restore the *MUTE* switch to the normal *ON* position and you are in business. All you need to do now is raise the *MODE* switch to the upper *SCAN* position and the channel display will indicate 'S1' or 'S2' according to the position of the associated *SCAN* switch. I would have preferred to see the channel display indicate the channels as it scans so as to provide the user with direct visual feedback of the scan function in operation. Even though the scan rate might be too fast for the eye to catch its every movement, I find the flashing display of 'S1' or 'S2' just a little bit uncomfortable - even though you know it's working you can never be sure until it stops and displays the channel. I think the competitors win on this point and will sustain the customer appeal because the operator can see at a glance that the actual channels are being scanned in the designated order...if you want to scan two or three channels only, you can see it happening. I'd give this your immediate attention Mr. Philips if I were you.

Mr PHILIPS ARE YOU LISTENING ?

But then again you didn't listen to the masses when they asked for a different antenna connector did you? You will probably never know how much market share it costs you, still, I guess it kept the competitors happy and helps keep the back-yarders in business fitting BNC and SO-239 connectors.

As far as we could estimate the FM-620 scans the full 40 channels in about five seconds and stops on a signal that is just strong enough to break the mute.

The priority channel function operates well but if you are listening to a station on another channel you will notice an annoying little 'chick' sound every couple of seconds as the receiver whips over to the priority channel, has a quick listen to see if anything is happening and if no signal is heard it restores the receiver frequency to where it was previously resident.

The *DUAL WATCH* facility is programmed similarly to the scan group channels and is handy for keeping an eye on two channels - the channel presently displayed and the user programmed priority channel. The channel layout in the FM-650 is similar to the 320 and the 620, except there exists no *DUP*lex or *REP*eater switch as such. In actual fact, the channel change switch effectively covers 48 channels - the usual 40 simplex plus another 8 channels - which are allocated to repeater operation. In effect, channels 1 to 8 are displayed twice - once for simplex and a second time for repeater operation in which case the microprocessor turns on a separate LED labelled *RPTR* to indicate the repeater function, is activated.

PERFORMANCE

Since the FM-620SD is essentially an FM-620 dressed up in its Sunday best, all the usual excellent performance features of the predecessor are retained. Just to be sure we ran it through its technical paces and came up with the following results.

Receive sensitivity was quite good at 0.25 microvolts for 12dB SINAD with the mute threshold set at 0.3 microvolts and a good level of hysteresis holding the channel open until the received signal dropped below 0.15 microvolts for more than a second or so. The signal strength indicator was quite useful but suffered from the usual UHF CB problem of having a very compressed scale - the full dynamic range being one light for 0.7 microvolts, 2 lights for 1.7 microvolts, 3 for 3.2 and all 4 lights for 7 microvolts. While this is a useful range, many local area signals are likely to be in excess of 15 or 20 microvolts, however, the feature certainly has some advantage when pointing a beam. I'd rather see the old meter returned for the sake of the hobbiests who regularly use beam antennas.

As we have come to expect with Philips recovered audio quality was excellent gear. The transmitted audio is similarly excellent and the test rig was adjusted to 4kHz deviation which could be pushed marginally higher by yelling into the microphone. Transmit power initially fired up to a 'sniff' under 5 watts but quickly fell to about 3 watts over the course of a minute or so. Woops....we found a faulty patch lead and, having replaced the lead, the result was much more acceptable although power still dropped fractionally after a lengthy transmission.

The mounting hardware of the 650 remains the same slide mount bracket arrangement that has been supplied right through the evolution of the Philips FM UHF CB series and works just as well or badly as it did all those years ago.

The same 5 pin microphone plug is used along with the same old 'out-of-step-with-everyone-else-or-are-they-out-of-step-with-Philips' antenna socket.

Our test rig was so much like an FM 620 that the original FM 620 compliance plate was still riveted onto the back panel exhibiting the serial number 123019. Apart from different decals there were no obvious external differences from its FM-620 roots.

We understand that the test rig is a prototype or pre-production model and that the internal alterations responsible for the new features will be integrated into a new circuit board as the evolution continues. In our test rig the different 'micro', a small neatly laced form and another tiny circuit board carrying nine components are a sure sign that this is not the final product. The FM-650SD still offers the provision for 'plug-in' SELCAL and the usual extension speaker socket. We notice that the internal speaker is not cut-off with the insertion of the ext. speaker plug which, like the antenna socket, is out of step with other manufacturers.

All in all an excellent rig which could be even better if Philips would simply fix the few minor but irritating complaints.

SUMMARY

The PHILIPS FM-650SD is a more advanced model of the previous FM-620 and has been updated electronically - if not in style - to offer users the more desirable user programmable scanning features already marketed by its major competitors. The 650 performs all function very well but is still marred by a couple of unpopular features like the antenna socket and an internal speaker that does not cut-off when an extension speaker is connected.

If you operate in an area, or areas of heavy RF pollution, the FM-650SD is probably the best choice for you. As an all round UHF CB rig the FM-650SD has to be considered an excellent performer and is pretty hard to beat in most respects. The unit is expected to be favourably priced against its similarly optioned competitors, but boy, I wish they's do something about that bloody antenna socket !

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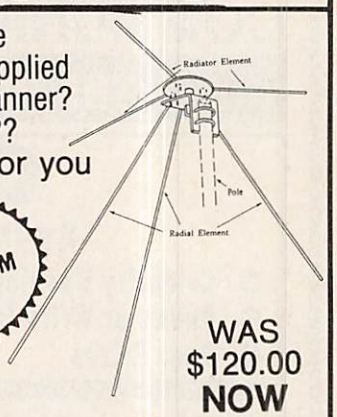

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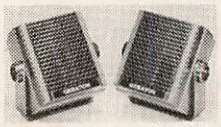

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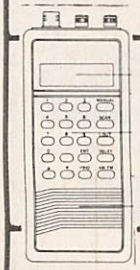

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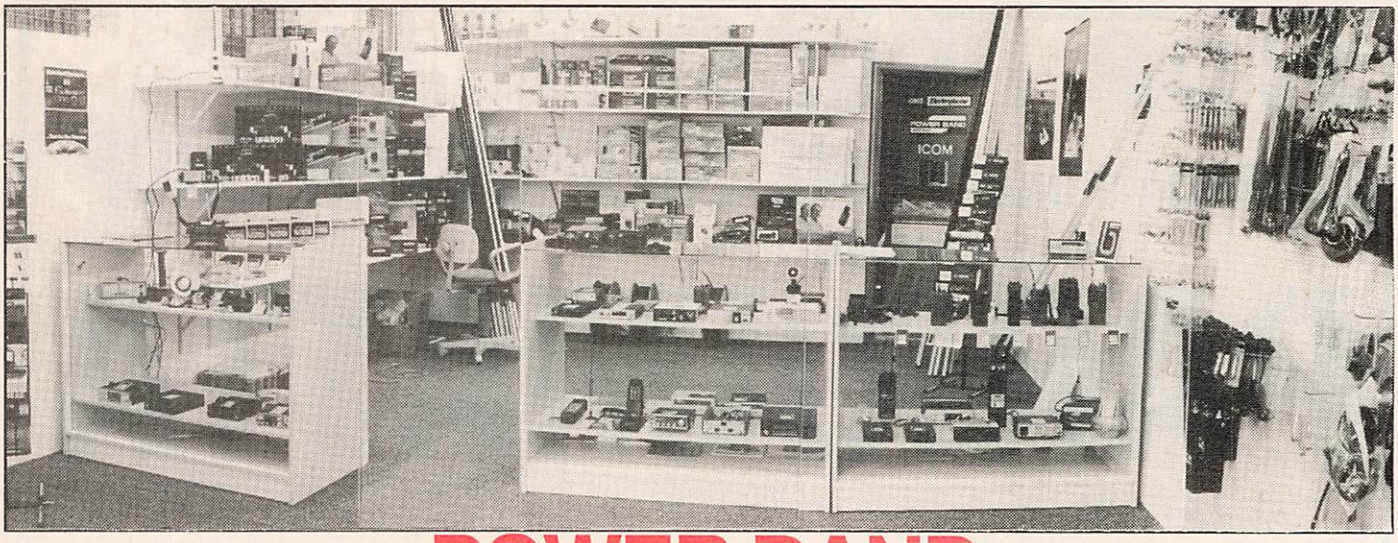

POWER BAND COMMUNICATIONS OPENS IN TASMANIA

On Monday September 9, POWER BAND COMMUNICATIONS officially opened the doors of their Tasmanian shop at 390 Main Road, GLENORCHY, a major suburb of Hobart located about 10 kilometres to the North of the city.

Power Band's new outlet is easy to find being situated directly opposite the new NORTHGATE Shopping Complex along a main north-south thoroughfare between Launceston and Hobart.

Frank Butterer, the Melbourne Manager for Power Band told CBA that the move to Tasmania was in answer to the demand from their extensive Mail/Phone Order Customer Base throughout the Island State.

He said, *"We are often asked by our mail and phone order customers why we don't open a shop in Tasmania because for one reason or another various product line and accessories are difficult to source locally. "So, after years of these requests we decided to go for it.*

"We have stocked the new shop with around $100,000 worth of CBs, phones and accessories and Ken has gone down to get things started and he's taken with him the latest IFR Service Monitor and Spectrum Analyser that's got to be worth a couple of years pay."

Frank continued, *"Up to date we've shifted nearly a tonne of stock to Glenorchy and surprisingly we still have heaps to go including the ever lengthening list of incidentals we seem to have overlooked in the initial inventory."*

Power Band Communications is an authorised dealer for Icom, Electrophone, UNIDEN, Sawtron, Philips, GE, Pearce Simpson, Bearcat, and a whole range of other products too numerous to mention here.

Mr. Butterer said, *"All too often Tasmanian operators are slugged for excessive freight bills because of the isolation from the North Island, but we've done our sums and because we shift equipment we have managed to absorb the freight costs completely.*

If we haven't got a particular item, in many cases we can source it from our main warehouse overnight - and it won't increase the price at all in more than 95% of cases - low priced, heavy items like metal products might incur a small extra charge for air freight.

"Our antennas have been popular in Tasmania for year," continued Frank, *"and we know that at least three Tassie repeaters are now using our PB-900 base station antennas with great success. I wouldn't even hazard a guess how many PB-11e beams we've shipped down south but it has to be hundreds of units."*

Given the tough times affecting many communication specialists, not to mention the recent closure of Captain Communications, it's good to see that some of the major operators in this industry are still expanding their business.

So if you would like to examine a wide range of CB and other communications products on display, or you need some friendly advice, drop in and have a chat to Ken Reynolds at :

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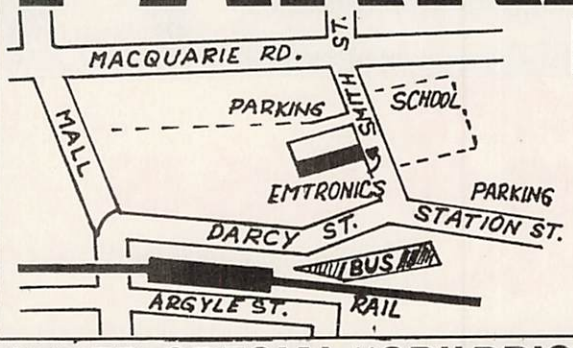

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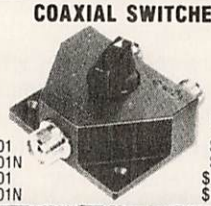

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NOTE: Skip conditions are virtually the same from Sydney as they are for all other East Coast areas — likewise Perth predictions can be taken as similar to those for other West Coast areas.

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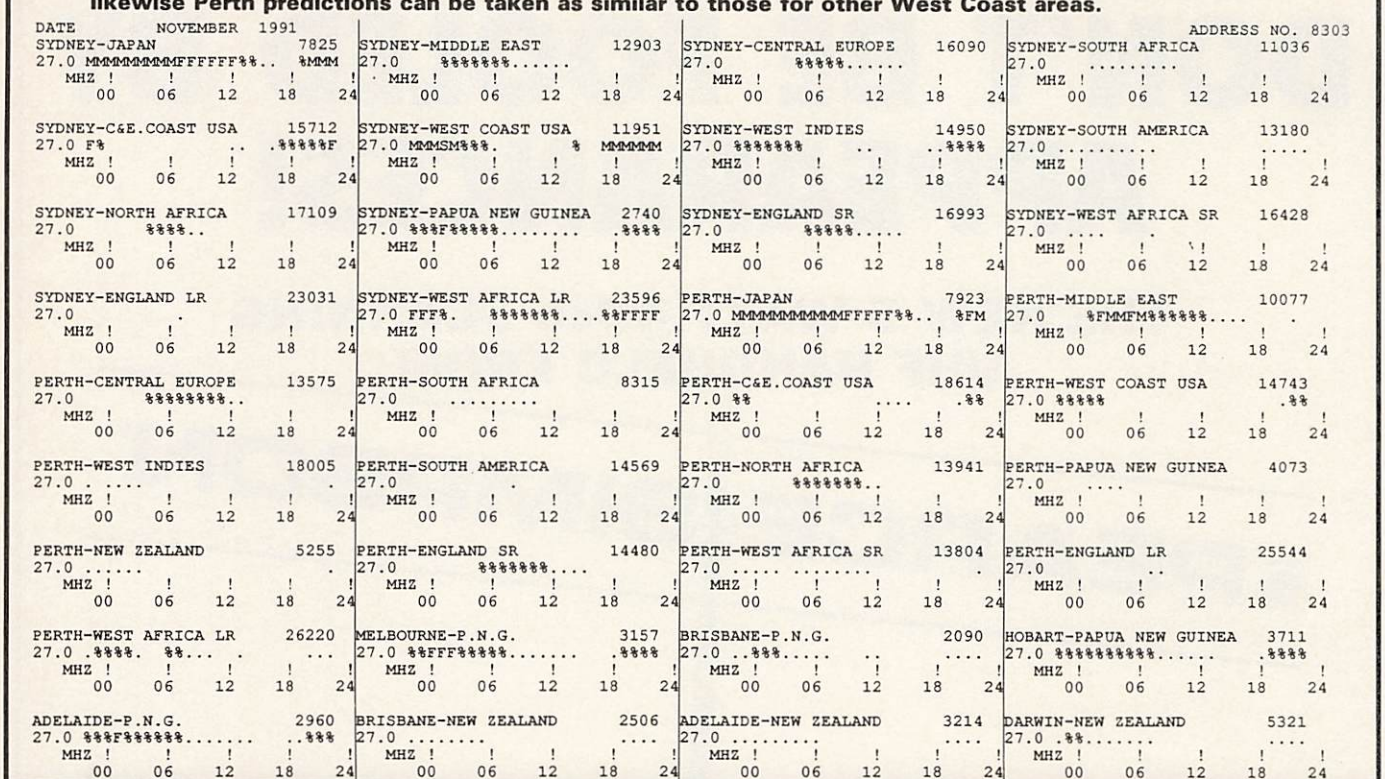


These GRAFEX predictions present the expected HF propagation conditions between Australia and a number of DX areas. Note that the predictions are given in Greenwich Mean Time from 0000 to 2300 hours reading from left to right. Each prediction shows the circuit name, distance between the terminals and information on propagation for the 24 hours. A GRAFEX symbol describes the predicted propagation conditions at 27MHz for one hour. The letter "F" designates the best conditions for HF communications.

GRAFEX prediction charts are supplied courtesy of the Ionospheric Prediction Service, Level 4, 15 Help St, Chatswood NSW 2067. IPS offers pre-recorded telephone information. To access the service, please phone (02) 414 8330.

LEGEND TO GRAFEX SYMBOLS

. Propagation is possible but probably on less than 50% of the days of the month.

% Propagation is possible on between 50% and 90% of the days of the month.

'F' Propagation is possible by the First F modes on at least 90% of the days of the month.

'E' Propagation is possible by the E modes on at least 90% of the days of the month.

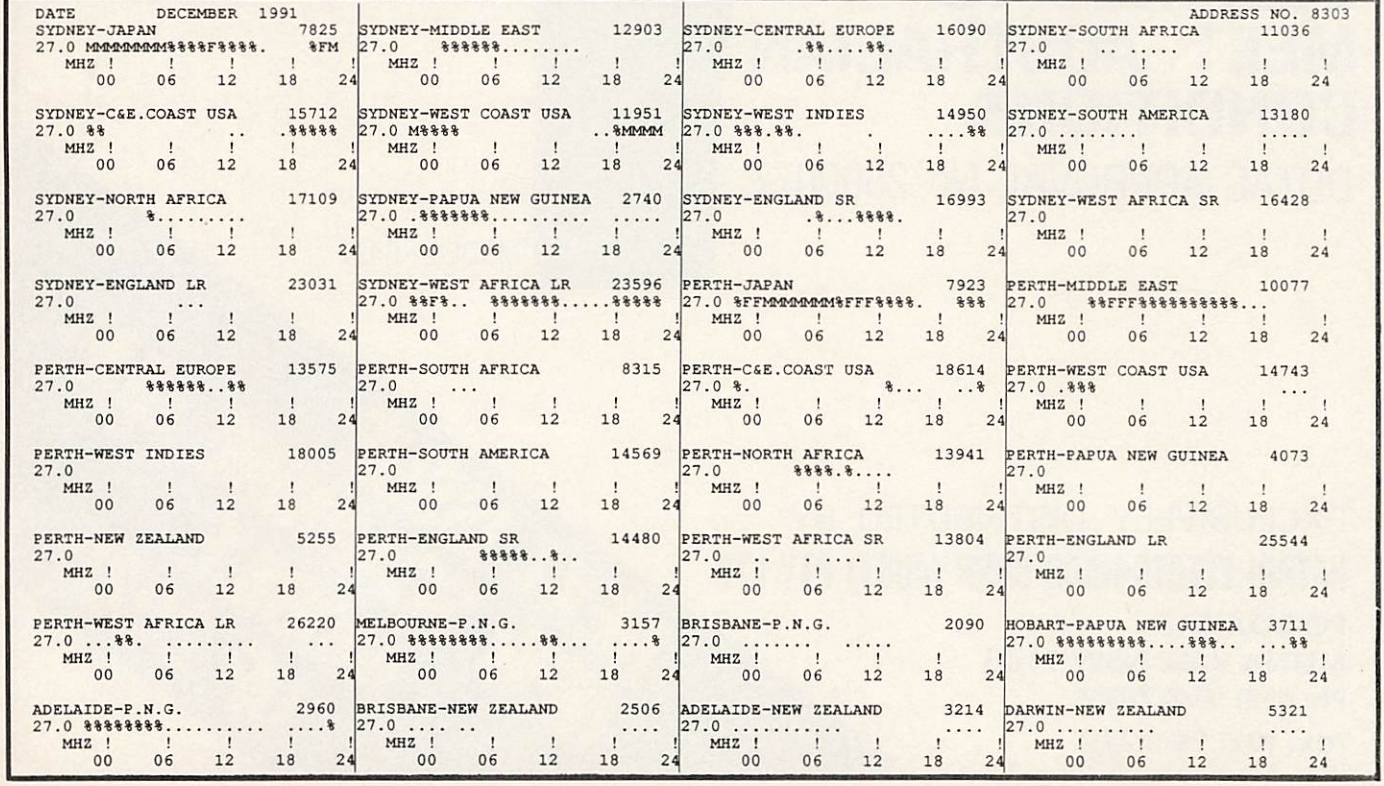
'M' Propagation is possible by both the First and Second F modes on 90% of the days of the month.

'S' Propagation is possible by the Second F mode on 90% of the days of the month.

'A' High absorption — above the ALF but probably too close to it for good HF communication.

'X' Complex mixture of modes including the Second E mode.

DATE DECEMBER 1991 — ADDRESS NO. 8303



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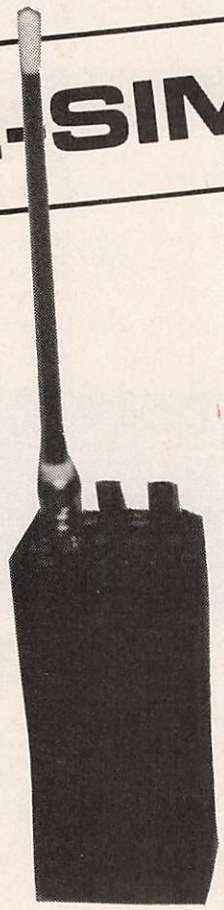

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NEXT ISSUE NEW SCANNING MOBILE UF 2020

spectrum anarchy

with Rod Fewster

FURIOUS FEWSTER TELLS IT AS IT IS...

PORTABLE MULTI-CHANNEL REPEATER

My item in the last issue about Paul from Roma SES wanting info on a portable multi-channel UHF-CB repeater drew a response from Andrew, a Singleton SES and CREST member who has been developing such a beastie and has done quite a bit of groundwork towards getting the concept approved by DoTaC. Maybe in the near future we'll see these in operation Australia-wide.

SEPTEMBER MUST HAVE BEEN THE MONTH FOR DOUGS.

Doug, a 73-year-old CBer from Beenleigh, rang to tell me that The Dreaded Garden Gnome had given him a $50 scratch-and-win ticket for talking on 26 Mhz. Doug reckons his only rig is a bog-standard AX-144 and that the voice on The Gnome's tape-recording wasn't his, but he got the ticket anyway. Another Doug, the 329 from Mullumbimby, told me he got a bit of a laugh when some turkey interrupted one of his conversations and called him a bloody wog and told him to piss off back to India. Doug is from Wales, and has a distinctly Welsh accent.

Yet another Doug, from the Brisbane suburb of Hamilton, rang one night telling me to leap on-air and listen to 33 AM. I did, but the signal was so weak I couldn't hear what was being said over the background hash. Doug held the phone near his rig and I was treated to the sound of some guy and his girlfriend having what would best be described as a "delicate interlude". The guy was obviously so overcome with passion that he forgot he'd left his desk mike keyed. (Long-time CB Action readers may remember me writing about a similar event in Queensland Scene about 10 or 12 years ago. I wonder if it was the same guy doing a repeat performance ?)

WHERE ARE YOU UNIDEN AUSTRALIA ?

It appears that Uniden Australia has closed down all its interstate offices and warehouses and is now shipping everything from Sydney, leaving only a salesman working out of a serviced office in each of the other States. Regular readers will have noticed a sharp drop in the advertised prices of Uniden gear over the past few months. While this may be due in part to Uniden's reduced operating costs I think the fact that Hatadi Pearce-Simpson has been aggressively marketing its own range and undercutting Uniden's prices by bulk dollars for some time would have a lot to do with it. Because ours is a communications hobby it's not hard to find out how much CB equipment sells for in other countries. I wish I had a dollar for every time someone asked me how come a PC-122 which cost around $300 in Australia could be picked up for only $99 (about $125 Australian) in the US, or why Uniden AM rigs were over a hundred bucks apiece here while the same rig sold for under $30 in America.

Uniden Australia may be starting to get competitive price-wise at last, but I'm betting that the boys at Hatadi won't just sit back and let Uniden eat into their share of the market without a fight.

AN OBNOXIOUS CHARACTER !

Some obnoxious character rang me moaning about losing a rig which he'd taken to the now-extinct Captain Communications for repair.

I tried to explain that the liquidators didn't have the right to sell it as it was his property and didn't belong to Captain Communications and that eventually he would get it back, and suggested that he contact David Gill in Sydney if he was really desperate.

The bloke then abused the hell out of me, saying he wasn't going to waste his effing money ringing Sydney and what effing use was I and why couldn't I ring Sydney and get his rig back and CB Action was supposed to stand up for the rights of CBers and yakkety-yak blah blah effing blah blah. I suppose he thought I was rude when I hung up in his ear. I suppose he thought I was even more rude when he called back a few seconds later and I did it again as soon as he started to speak. When I did it a third time a few seconds later he took the hint and didn't call back.

Not a very big column this issue because, as usual, very few people told me anything worth writing about.

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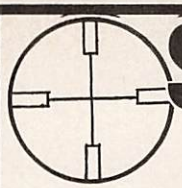

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Jack Haden spells out...

HOW TO CORRECTLY WORK A DXpedition

As avid Dxers, we are always on the constant lookout for news regarding a DXpedition, whether it be rumored or a scheduled one. Over the past two to three years there has been an abundance of DXpeditions from a wide variety of locations around the globe active on the 11-metre band. Without these DXpeditions and the drive of the people behind them, who plan and fund the event, we would have never got so much cherished QSL from many rare countries.

Working DXpedition is not without its price, usually one has to do some sort of battle with the ever present pile-ups that occur on the operating frequency.

The Europeans or North Americans with their huge antenna arrays with linear amplifiers to match, usually make the first contacts. This is part of the parcel, and always will be.

Sometimes the DXpedition station operator shows some thought and initiative and requests calls from a certain region or area and thus increases the chance for those outside the less populated DX countries of getting through. However, this doesn't happen a great deal, when it does, it usually causes problems by way of jamming and other noise from disgruntled DXers, if you can call them that, from the larger countries, usually within Europe or the US.

As we all no doubt know, pile-ups bring out the worst in a lot of DXers - constant calling, tuning up, overdriven radios to boot, and the most common offence, failure to obey instructions from the D-Xpedition station.

Many times I have heard a DXpedition operator ask Europe to standby for a moment while he works a few people in Asia or the Pacific while the band is open to these ares, but no, they still call persistently and will not standby, this is a common occurrence with the DXpeditions originating from the Continent. Many people have missed out because of the sheer rudeness and arrogance of these people.

One pet hate that DXpedition operators have is the clown that works the D-Xpedition two, or three, sometimes four times in the duration of the operations.

Not only does this waste the DXpedition operator's time but it also cuts people out of a chance to work a new country.

Usually the station that does this is greedy and likes to show off that he can work the DXpedition anytime he likes. In my book one contact is enough, you've worked DXpedition, exchanged a two-way report, have your contact number, so then your business is over, let someone else have a shot.

Another pet hate is the fool, usually one of the brain-dead types, who has secured the contact but persists in spelling out his name, location and gives the weather report and other irrelevant drivel. While this idiot is wasting everyone's time doing this, the propagation is most likely dropping out and thus people end up missing out. As most of us know, DXpeditions are usually only on-air for a limited time, some are only 48-hour operations and naturally enough they want to work as many stations as they can and don't have time to waste listening to a pile of useless information and/or general chatter from someone who simply doesn't know (or maybe care) how to work a rare DX station.

JACK HADEN IS NO NEWCOMER TO DXpeditions HAVING WORKED FROM MANY RARE LOCATIONS. IN THIS ARTICLE HE LOOKS AT THE PROBLEMS FACED BY DX OPERATORS AND EXPLAINS THE RIGHT (AND WRONG) WAY TO GET THE BEST RESULTS

Another irritating aspect of DXpedition operations is the odd imbecile who persists in asking the DXpedition station to standby and listen for his mates, and thus uses up valuable time, and again if the path is failing, causes many to miss out. This is common on both the amateur bands and 11-metres, the majority of seasoned DX operators on an expedition usually ignore this type of request and carry on working through a list or go back to the pile-up.

Many people miss out on working a new country because of the lack of experience at the DXpedition station's end. A top DXer knows when the band is most likely to be open to various regions and will usually do his best to look for stations from that area at certain times and thus spread out the chance options for the weaker stations to get through.

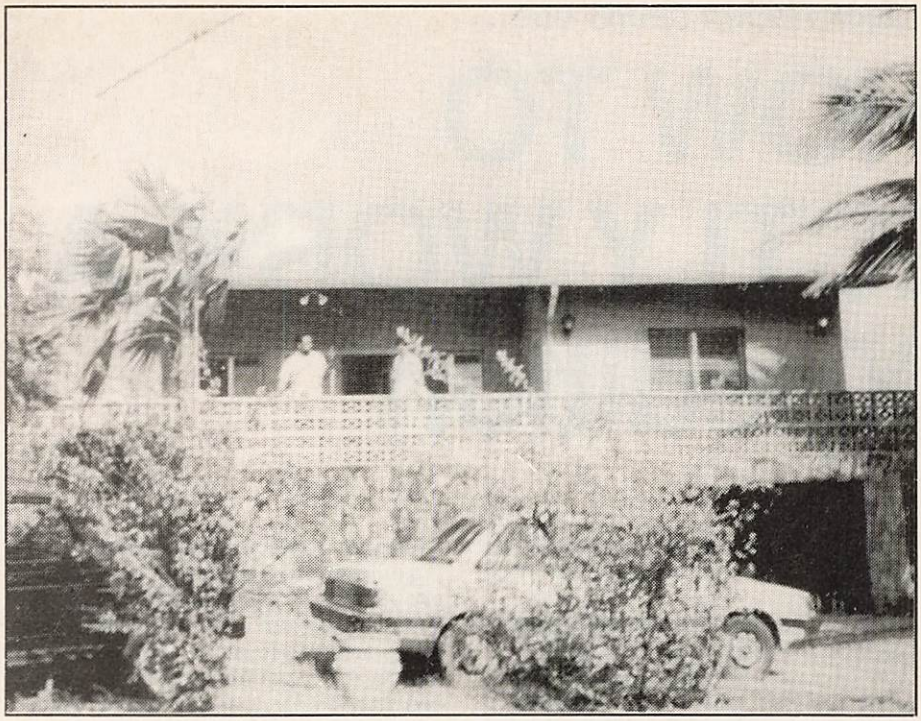
The inexperienced DXpedition operator takes them as they come and usually takes the strongest signals.

Recently I have noticed some D-Xpeditions have elected another station to move up the band and take a list of stations from certain ares, thus avoiding the pile-up on the operating frequency, and in turn giving people a better chance at getting through. An excellent example of this was in August with the operation from Iran.

The 154-GIR-01 was working stations from a list collected by Virgilio, the 1-GIR-001, some 10KHz up the band. This works well provided you have propagation to both stations at the time.

On the amateur bands many D-Xpedition stations elect to work split

(continued over page...)



The guest house where Ozzie stayed during the 157-AT-VP2M operation, Montserrat Island, note the antenna to the right of the house.

HOW TO CORRECTLY WORK A DXpedition

(continued from prior page)

frequency, ie. they transmit on one frequency and listen elsewhere for calls, usually in a 10 to sometimes 20KHz spread either up or down from where they are transmitting.

This method of operation reduces the rabble of having all the stations calling on the one frequency, as in the case of 11-metres, thus the DXpedition operator can easily pick out call signs and increase the contact rate. Wouldn't be a bad idea if this was tried on 11-metres, a good way of getting rid of the brain-dead and some of the persistent callers from the operating frequency.

One cannot beat the excitement and pride generated by a first contact with a new DXCC country, after the initial event one tends to sit back smugly and sweat on the day the much sought after QSL arrives, a confirmation of your achievements. However, after sending the QSL card away, of course with the mandatory contact number and the US$1 for return postage, how much thought do you give to the operator or operators of the D-Xpedition - the time, effort and not to mention the expense that is involved along with the associated risks in giving you the chance to obtain that much needed new country?

Despite a lot of the heresy no official sponsor or DX group actually foots the bill for the overall cost involved, not like the amateur bands where radio manufacturers often donate equipment and big CS Clubs donate funds from their membership towards the costs. On 11-metres it is usually the operators of the DXpedition that foot the bill, and I have yet to hear anything to the contrary.

Recently I received a letter from Ozzie, the 11-AT-116 from Puerto Rico in the Caribbean. Ozzie has given a lot of his own time and effort in activating some prime DX spots in the Caribbean to us and, to my surprise, funded it all himself along with fellow Puerto Rican DXers who also chipped in quite a bit.

I was under the impression that the Alfa Tango Group, rumored to be flush with funds, was the driving force behind these operations, but I am indeed incorrect in this thinking.

Although they have been restricted to islands within the Caribbean Sea, they have however, built a solid reputation for good operating and in turn built a sound repertoire in the art of DX and DXing second to none. At their own expense they have produced some unique QSL cards highlighting the DXpeditions undertaken and have won the respect of many DXers worldwide.

Although Ozzie was supposed to have been a part of the DXpedition to Saint Martin Island during 16-17 March of this year, signing as 207-AT-0, he did however manage to drop in on the group running the operation on Saint Martin and witnessed an 11-metre band record being made, a total of 3000 contacts were procured, the most any DXpedition has made. Later an additional 100 contacts were made, bringing the total to 3100, the latter 100 would receive a special QSL photograph of 11-metre history in the making.

A total of five operators from five different countries were involved in the operation of 207-AT-0 along with Ozzie, arriving near the end of the operation.

The five operators involved in 207-AT-0 were: 1-AT-316 Luca from Italy, 14-AT-375 Luca from France, 107-AT-103 Henry from Monaco, 166-ST-101 Ronnie from Saint Martin Saba Eust (Dutch side) and of course Ozzie the 11-AT-116 from Puerto Rico. All these people were kindly accommodated at the house of Eddie, the 207-AT-101 on the island.

These people went to a great deal of personal expense to make it all happen and in turn made an 11-metre record for contact established on one single Dxpedition.

All other expenses, such as airline tickets, visa fees, lodgings, food and drink etc is all paid for out of the DXpeditioner's pockets. Ozzie mentions that many DXers fail to stop and think of the hard work involved not to mention some of the risks taken to get the station on-air in a foreign country.

Of course there is the constant worry as to whether the DXpedition will be a success or not. Will the Customs Officer at the airport seize the equipment? Will the equipment get damaged enroute?

Where will be the best place to set up operations without drawing too much attention (especially if 27MHz is illegal in the country concerned) and not causing any interference such as TVI or BCI etc?

Ozzie mentions that on some D-Xpeditions he and the team had little sleep for three or four days because the DXpedition is expected to be on-air all the time to serve both daytime and nighttime propagation paths and thus put as many people through as possible.

A DXpedition is 30% fun and 70% hard work in Ozzie's book. Ozzie states: "It is also exciting, there is the excitement traveling to unfamiliar places, taking up the challenge, then being able to return home safely to talk about it. I personally find great satisfaction, knowing that I was responsible for many radio friends working a new one."

If requested, the Alfa Tango Group will contribute some QSL cards, but these will be the 'standard generic' QSL with just the

At the house of 166-AT-101 on Saint Marten, Saba Eust Island, left to right: 107-AT-103 Henry, 166-AT-101 Ronnie, and 1-AT-316 Luca.

logo (no flag symbol) and section to fill in the contact details.

Any additional information to be printed on these cards is paid for by the D-Xpeditions and not Alfa Tango.

Ozzie states: "If a DXpeditioner has pride in his work, I believe he should have a special QSL prepared for his activity. I personally don't like those 'generic AT QSL cards', everyone has already received one. I have hundreds sent to me by Italian operators."

The following is a brief rundown of some of the problems that Ozzie endured in the course of his activating four DXCC countries:

1) *US Virgin Islands(127-AT-0)*

Luck was on Ozzie's side at the airport when he arrived, the Customs Officers were preoccupied detaining drug smuggling suspects and he passed through the inspection counter without being searched.

2) *Desecheo Island(299-AT-0)*

As Desecheo Island is a wildlife reserve a permit was obtained to visit the island for a few days and conduct 'radio experimental activity' without mention that any 11-metre band transmission would be involved.

3) *Anguilla Island(219-AT-0)*

The main concern with Anguilla was that the authorities were worried that Ozzie was going to sell the radio in Anguilla and thus avoid payment of import taxes. After signing a Custom Form assuring the radio would leave Anguilla with him, and giving a further assurance that no transmissions would take place and the radio was to be used for listening only, he was allowed to take it into the country.

4) *Montserrat Island (157-AT-0)*

After being given a difficult time by airport Customs, Ozzie was allowed to pass into the island after discreetly giving an official a US$20 bribe!

Reflecting back to the QSL department, Ozzie seems to fair much better than others in the receiving of at least US$1 (the 179/13-AT-000 DXpedition to Czechoslovakia only received 50% funds for return postage) which goes towards his mailing costs, in fact he says around 95% of operators sent something to pay for return postage costs. The other five percent sent nothing at all. Ozzie mentions that postal authorities in Puerto Rico are not too keen on handling IRCs in exchange for postage stamps.

Out of all the people worked on D-Xpeditions Ozzie reports that 90% of the contacts sent their QSL cards, with the remaining 10% not bothering to send at all. With these types of figures available, Ozzie can accurately gauge the number of QSL cards that he needs from the printers thus keeping his costs within reason by not ordering excess cards.

So there it all is, an insight into the behind-the-scenes activities associated with DXpeditions. One thing that surprised me was that these dedicated DXers pay the majority of the costs from there own pockets, I for one was under the impression that the Alfa Tango group at least paid for the QSL cards but it is now apparent this is not so, although they stand to reap the glory from such operations as their call signs are being used.

One of the biggest problems that face DXers especially here in Australia and the Pacific is the difficulty in procuring the single US dollar notes to include with the QSL card sent. People in the major capital cities have no problems doing this, a visit to a major bank in the city or to Thomas Cook will see you obtain as many US dollars as you can afford. People in the country or outback Australia have only really two alternatives - buy expensive IRCs from the post office and hope they will be accepted in the country of destination, or, send Australian mint stamps and hope that the QSL manager will take pity and accept them and give you a reply. Gone are the days when one could send an Australian one or two dollar note. With our five dollar note being our minimum denomination in paper money it would be a very expensive price to pay if one was to send these with each QSL.

As for the one and two dollar coins, well, they most likely end up escaping the envelope before they arrive at their destination, either by theft or poking a hole through the envelope! So next time you chance upon a DXpedition, stop and think awhile about the behind-the-scenes effort and expense that goes into such an operation and don't grumble too much when they request a US$1 for return postage costs.

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DX - UP, DOWN and AROUND 11 METRES ***...with Jack Haden***

Sceptics already are claiming that sunspot cycle 22 is on a rapid decline, poor propagation paths and erratic conditions giving credence to these comments. It is true that cycle 22 was not all that it was cranked up to be, it is nowhere near as good as cycle 21 and the fruits of DX that came with it. Personally though, I expect the band to pick up quite a bit as we near our summer season, but the big signals of the past will not be as prevalent and prolonged as those we once enjoyed.

Despite recent poor conditions the double dose of Europe and the Middle East via the morning longpath and afternoon/evening shortpath remain with us from time to time. As in the past, it is a matter of being on the band at the right time to reap the sought after benefits, perhaps the odd new country or two if you are lucky!

The Penguin Islands, off the coast of South Africa and Namibia, have recently gained DXCC status, bringing the total of DXCC countries to 323 in all. The ARRL will officially accept cards on the amateur bands from 1 September, 1991 as valid to the claim.

North Korea has also once again emerged as a subject of discussion with regards to DXCC status, and it appears that DXAC has won the battle to have North Korea added to the DXCC country listings. At long last the Democratic People's Republic of Korea will be accepted, that is, after the first accredited operation from the country!

It has come to my attention via a letter from the "el-supremo" of the infamous Alfa Tango Group, Mr. Aldo, 1-ATOO1, that he is in fact displeased with what I have published regarding the FREEBAND movement. It appears to me that Mr Aldo only wishes the good side of Alfa Tango to be published within these pages and not other important issues which I feel we all should be informed about. However, while Mr. Aldo is quite critical about my writings at no time whatsoever has he furnished a letter to me nor the editor of CBA offering an alternative viewpoint to what has been raised about FREEBAND, or CRAP as I call it. Giving the illustrious gentlemen the benefit of the doubt by way of a four-page letter sent direct to him in Asti, Italy around two months back, I have yet to receive a reply. I even went so far as to offer the "oh great one" an invitation to attend an interview at the offices of CBA here in Melbourne so that the issues could be thrashed out while he is in Australia on a planned visit in the not-too-distant future. Of course, the interview will include some official people on the panel outside of 11-metre activities who are also very much interested in meeting the illustrious one from Italy and volleying a few questions his way. To date no response from the shrine in Asti.

May I remind avid DXers if you wish to comment on what I have published with regard to FREEBAND (whether you are for it or against it or as just as confused as I am over the whole debacle) drop me a line at the CBA offices in Melbourne. To date only two letters have been received with the statement that their details not be published, thus it does not warrant another special feature on this fascinating and weird topic. Perhaps as I mentioned, when sunspot cycle 22 goes right down the tubes the whole FREEBAND idea will hopefully go with it? What's your view?

AFRICAN and INDIAN OCEAN REGIONS

Not a great deal of surprises from this area, although the gang in Western Australia seems to have better pickings than us less fortunates on the east coast.

* ***Mauritius*** has been about for those who still need this one, but remember their QSL return record is not all that good. Paul, the VL-1O6, was logged at O455z with a fair five by two report and had quite a pile-up wishing to work him.
* The island of ***Mayotte*** appeared by way of Jean who signs at the 189-1O-44O. Jean was heard at O521z and was a good five by seven at the time.
* ***Ceuta Melilla*** was also about the traps for those still after this one and at the rather late hour for this area of O956z I noted 106-CM-1O1 operated by Osvaldo. He was five by five at the time and requested that cards go via his home address in Spain. Quite a pile-up was heard at O744z calling a 152-GIR station in the ***Maldive Islands***, although I heard nothing at all from the station concerned as propagation was poor to my location on the island of Nauru.
* ***Reunion Island*** was noted on the band at O355z by way of Claude who signs as the TT-119. Claude uses a President Washington fed to a five element homebrew yagi at 25 feet and was a good five by six when heard.

* A surprise appearance from ***Lybia*** was made at O823z via station MPS, name unknown. He was barely audible with a three by one report and soon faded out, some European stations questioned his validity.

* The ***Canary Islands*** were logged on Nauru via the longpath at 2259z with a massive five by nine report by way of Antonia who operates as the 34-AT-125. Apparently conditions were same down south as a number of Australian and New Zealand stations were noted in hot pursuit.

MIDDLE EAST and ARABIA

* As usual the signals from ***South Africa, Zimbabwe, Namibia*** and at odd times ***Swaziland*** have been about, look around O2OOz onwards if you are still after these. Conditions to this area should pick up as we near the summer months.

* A huge pile-up of stations was noted at O5O5z calling a station in ***Egypt*** signing as 117-AT-1O1, although I could not hear any evidence of the station in question. Some suggest he may have been a slim, work it now and worry later I say.

* The ***Islamic Republic of Iran*** has been about by way of 154-GIR-O1 and was logged at 1O31z with a fair four by two report. A list operation was in progress here with Virgilio the 1-GIR-OO1 in Italy taking the list 1OKHz up, however, due to time expired in list taking the band had virtually dropped out when he returned to the operating frequency 1OKHz down to put people through. QSL route is unknown to date.

* ***Dubai*** in the UAE has been about by courtesy of Shadhid, 94-SW-1O1, and he was logged at O731z with a poor four by two report and had no shortage of takers to his calls.

* Increased activity from ***Kuwait*** has been evident as things gradually return to normal there. At 0947z Jassem the 1O2-AT-1O8 was a good steady five by five and shortly after I noted 1-KA-79 operated by Hussan with a weaker four by two report at 1OO2z.

* ***Israel*** was noted on the band at O45Oz with Judah, who signs as LC-5 leading the way with a good solid five by nine report both in Australia and the Central Pacific. He was followed by JC-1O1 Abraham at O545z from Jerusalem with a good five by eight report.

* Signals from ***Lebanon*** have been picking up here in eastern Australia with 1-RB-OO3 operated by Ali being a fair four by two at O83Oz. The band picked up at 1O33z with 112-LB-1O1 Faisal coming in at a healthy five by seven report. Faisal was busy looking for Arabic speaking stations in Sydney or Wollongong at the time.

* ***Saudi Arabia*** was about via the longpath at 2159z with 48-SA-1O1 operated by Ken, a US serviceman, putting a good five by three signal into Nauru with a throng of Australian stations chasing him. Ken was due to return home on 15 September. Cards go via his Californian address.

* ***Syria*** has been activated from time to time by way of a Saudi Arabian station operating portable within the country. It is a case of being about at the right time to secure this one.

EUROPE

* ***Estonia***, which was part of the USSR, made a debut on the 11-metre band by way of Tom who signs as the 3O4-ES-101. At 113Oz Tom was a good five by six. Tom advises that there will be a two-month wait for QSL cards, that is if you sent the US$2 that he requested. If you didn't, then you may be in for a longer wait!

* ***Czechoslovakia*** is still about for those who are still after this one. At O743z I noted 179-CZ-01 operated by Amor, who was a good five by five report and is north of Prague, the capital. Amor requests US dollars only and no IRCs if you wish a return card.

* ***Bulgaria*** is still about, although I should think most of the avid DXers will have this one in the bag by now. Angelo is still doing a top job as 178-AT-1O1 and was logged at O731z with a five by two signal in eastern Australia. Cards go direct to Angelo.

* ***Poland*** was heard at 0646z via Piotr who signs as 161-EE-313, and although only a poor four by two from his location at Burgas he had no shortage of takers from the Pacific region, QSL direct.

* The ***Azores Island*** was recorded at 2236z via the longpath by way of 75-EE-1O5 Jose, who was a good solid five by nine at the time.

* The ***Balearic Islands*** still prove to be most popular with DXers in the Pacific and at 2230z via the longpath I heard Peter, the 49-SR-O3, at a good five by eight on Nauru. Stations in Australia were piling up to work him, his Alfa Tango call is 49-AT-115. On the shortpath at O816z popular Balearic Island DXer Jaime the 49-AT-1O2 was logged with a five by three report and was looking for stations in the Pacific at the time.

* Despite a civil war continuing in ***Yugoslavia***, Zele, the 45-AT-216 managed to come and work a few in the Pacific, at 1O53z he was a steady five by six on the meter.

* Plenty of activity from ***Greece*** has been noted, at O523z 18-DX-73, name unknown, was heard with a good five by five report and later he was followed by 18-AT-112 operated by Tasos in Athens with a very big five by nine plus 1ODB signal.

* ***Romania*** was heard at O540z by way of station Up-3 operated by Doru and he was a poor three by one at the time, QSL cards go via his manager 19-AT-128. Some people say this one is a slim, I will of course leave it to you to decide, work now, worry later!

* ***Scandinavia*** is still about, but their signals are down on what we previously enjoyed, although I think they will pick up in the next few weeks. George, the ever active 27-AT-127 was noted at O555z with a fair but unstable five by five report, also 47-AT-1O1 in ***Denmark*** was noted at O6659z with a good five by six report but subject to fade.

* As usual rumblings from ***Italy, France, Spain and Portugal*** etc are about but I should think most of us would be looking for some rarer prefixes by now.

CENTRAL SOUTH AMERICA and THE CARIBBEAN SEA

* Not a great deal of rare stuff to report from here, the regular prefixes are coming through as normal, although the supposed activity from ***Belize*** has still eluded most of us. Belize is still a much needed new one for the majority of us, although some in New Zealand say they have worked and received a card from there. ***Honduras*** is very active for those who still need this one, at O751z I heard George the 28-AR-1O1 coming through with a good five by three report.

* ***Chile*** was noted at 22O1z via 32-AT-135, name unknown, she was coming in quite well with a five by nine report and was soon followed by some good signals from ***Argentina.*** Enzo, the 4-AT-191 was logged at 2233z with a five by nine plus ten DB.

(continued over page...)

dx international

continued from prior page...

* ***Peru*** was heard at 2344z by way of Paulo the 639 from Lima, he was five by four and had no shortage of takers to the call. An excellent signal from the ***Bahamas*** came from 121-CE-O15 in Freeport, at 22O7z he was a solid five by nine with hardly any fading at all.
* The ***Netherlands Antilles*** has been about by way of 7-AT-1O7 and at 2335z was a fair four by three report into eastern Australia.
* A station calling from ***Havana, Cuba*** in Spanish was noted at 2359z with the call sign of 888, he was only a four by two at the time and was quickly buried among the other rabble.
* ***Bermuda*** was logged at O153z with station UNIT-395 operated by Tony, although only a poor three by two he had no shortage of takers to his calls.

ASIA and THE PACIFIC REGION

* **There has been quite a lot of activity from this region in t**he past few weeks with good signals despite poor band conditions. ***Azerbaijan*** in the USSR has been in abundance with Alex the 3O3-AT-1O3 being active nearly each day. At O540z Alex was five by five in the clear. Also from Azerbaijan I logged 3O3-AT-243 and at O823z he was a good solid five by seven.
* ***Sakhalin Island*** was about by way of 3O2-FS-O6 operated by Nick, and he was a whopping five by nine plus at O821z. ***Kazakhistan*** has also been about with 3O8-AT-1O2 Alex leading the way with a five by six report at O94Oz. QSL via 1-AT-762 in Italy.
* ***Tadzhikistan*** was logged at the early hour of O13Oz with 313-AT-1O2 Serge coming in at a good steady five by five and increasing to five by nine by O22Oz. He had quite a large pile-up at the time.
* ***Georgia*** was heard around O83Oz by way of Alex the 3O6-GIR-1O3 and at the time he was five by two and fading fast, and was being interfered with by 3O8-SU-OO2 who was operating close by with a five by nine plus signal from Kazakhistan.

DXPedition NEWS UPDATE

- ☐ *Due to the poor propagation conditions recently we have now witnessed a decline in the number of DXpeditions. It is not worth the time and money involved activating some rare DXCC country if a handful of contacts are to be made. Perhaps when the band does pick up a bit we may hear the activation of some rare places, wait and see is all I can say.*
- ☐ ***Jersey Island*** *has had the proverbial pants thrashed off it by way of DXpedition activity of recent times. On 7 July, 13-AT-137 operated portable 167 and was logged at O654z with a fair five by five report, cards go via 14-AT-133 in France. On 11 July another appeared from Jersey by way of 14-AT-133 portable 167 and at O810z was five by two, cards go via 14-AT-133.*
- ☐ *Further down the log* ***Jersey Island*** *appeared yet again on 11 August by way of DXpedition 167-CV-0 and at O933z was a good five by five. QSL via 31-AT-11O in Portugal, Europe.*
- ☐ ***Andorra*** *was activated by a Spanish station during 20 July, his signal was so poor all I could get was the name Vince and he was 30-AT-?? portable Andorra. He was logged via the longpath at 2240z and was barely readable at the time.*
- ☐ ***Market Reef*** *appeared on the band as 213-YB-0 on 26 July and at O821z was a miserable three by one report. QSL route unknown.*
- ☐ ***Latvia*** *in the USSR appeared over the period 27/28 July signing as 31O-RS-0 and at O933z was a poor three by one, stations in the Pacific had a fight to get through. QSL route unknown.*
- ☐ ***Malta*** *appeared more or less as scheduled over the period 23 to 25 August. Two stations were involved, the first being 93-AT-9HB which appeared on 25 August and was a good five by five at O6O2z. QSL route is via 1-AT-1928 in Italy.*
- ☐ *Some confusion arose over the recent activation of* ***Crete Island in Greece,*** *some were heard calling 9O-AT-0 and others the next day were calling 1-SG-00. The period of confusion was 19 and 20 August with the end result being 1-SG-00 being dominant to 24 August. Cards concerning 9O-AT-0 go via 18-AT-1O9 and the other 1-SG-00 operation go via 18-AT-1O8, so I am led to believe.*
- ☐ *Those who chase IOTA points would have been thrilled to hear 165-BDS-0 which appeared on 23 and 24 August from* ***San Antioco Island, off southern Sardinia,*** *at 1139z the signal was a good five by eight. QSL route unknown.*
- ☐ *Although bogged down with work on Nauru I still managed to switch the radio on and listen for the following, which I failed to hear: 233-NF-0, 251-NF-0, 231-AT-DX, 313-AT-0, 314-AT-0 and the much needed 203-AT-DX from* ***China****. Conditions were open to Europe but I failed to hear any of those mentioned, even skipping two BBQs on the island to see if 2O3-AT-0 made it on air. If you worked China then cards go via 1-AT-O68.*
  Also I failed to hear the planned DXpedition to ***Guyana*** *signing as 131-AT-0 over the period 21 to 24 July. Conditions to South America were fair but nothing heard, if you were lucky then cards go via 5-AT-141 in Venezuela.*
- ☐ *If you still need* ***Zimbabwe*** *confirmed then look about the usual traps 27 October to 16 November for 85-AT-DX, QSL via 26-AT-429.*
- ☐ *Activity from* ***Syria*** *is rumored for sometime in September or possibly early October and will sign as 181-RC-0, full details and QSL route etc are still very much sketchy at the moment, it will be a case of wait and see I think.*
- ☐ *Top Soviet DXer, Juri, the 3O2-AT-15, is planning to activate* ***Franz Josef Land*** *sometime in October and will most likely sign as 3O2-AT-1O5 portable 3O5 division. Juri also hopes to be active from Armenia as 3O2-AT-1O5 portable 3O1 during this September (probably passed by the time you read this), as usual his cards go via his Manager: 1-AT-157 in Italy.*
- ☐ *While on the topic of Juri and his DX exploits, you may be interested to know he made a total of 1572 contacts in 66 DXCC countries while portable in the 314 prefix. Also he made a total of 834 contacts into 47 DXCC countries while portable in the 313 prefix. A note from his QSL manager, Mario the 1-AT-157 advised me that all cards for 313 and 314 have now been dealt with, so if you haven't received yours you had better check where you went wrong.*
- ☐ *Those of you who worked the 254-VAT-0 operation from* ***Mount Athos*** *should have receipt of the card by now, a delay of two months arose owing to a change in postage format and the transfer of the logs to computer. Also I have been advised that all cards have been sent for the 13-AT-OOO portable 179 Czechoslovakia despite some people failing to send return postage (see special feature elsewhere in CBA) all have been responded to.*
- ☐ *Cards are expected anytime now from the 2O7-AT-0 operation from* ***Saint Martin Island.*** *Also I haven't heard of anyone receiving their cards from 281-AT-0 activation of* ***Ogasawara Island*** *as they too should be close to eventual issue.*

* The north coast of the ***Black Sea*** was represented by Rik the 50-SU-O18 and at O746z Rik was a good steady five by six in the clear.

* Ken, the 50-AT-1O7 near ***Moscow*** was logged at O542z with a fair five by three report owing to the band being poor at the time.

* ***South Korea*** is still about for those who need this one, at O737z 1OO-RC-O1 was heard calling for Pacific area and he was a five by seven report. The following morning at 221Oz I logged a good signal from 1OO-WS-O2 with a solid five by nine report.

* ***Thailand*** has been very active with 153-TH-O1 operated by Bong coming onto the band at O838z with a five by four report, also 153-RC-1O1 operated by Semuk was active at the early hour of O119z with a good five by six signal. Alan, the 153-SR-O3 has also been about and at O611z he was five by eight.

* Regular from ***Singapore***, Far East Radio O1 Dave, is still about and putting the usual good signal into the Pacific, at O659z he was five by nine plus.

* ***Taiwan*** is becoming increasingly popular on 11 metres with the following stations logged: 155-AT-1O3, 155-SR-O2, 155-PT-1O2 between the hours of O656z and O929z, all with excellent signals.

* ***Brunei,*** that oil rich nation in Asia, was noted on the band at O52Oz via 225-MP-1O1 operated by Hendra. At the time the signal was only a poor four by two but this didn't deter the many DXers eager for a contact and a new one.

* ***Hong Kong*** is about the band quite a lot but it is not often heard in the English language. At O449z I noted 6O-SR-1O1 on the band with a good five by seven report. He was having a long rag chew about Hong Kong's future under Chinese rule, due in 1997.

* ***Tuvalu*** was noted at O7O9z by way of APINELU-TIU from Funafuti Atoll, the capital of the tiny nation. He was five by four and was working a number of Australians at the time.

* Station 747 has been heard from time to time calling from ***Samoa,*** although it is not clear as to whether he is on Western American Samoa, he was a fair four by three at 2251z.

* ***Guam*** is still around and at O419z I logged 62-ON-1O6 with a good five by nine signal subject to noise from Indonesia.

* ***Fiji*** has also been about on odd occasions and at O345z Willie, the UNIT-2O9 was heard with a five by five report from Suva, not long after 99-FI-O1 Jack was about at O455z with a five by two report from Lautoka.

* Brian from the ***New Georgia Islands*** is about from time to time as BS-44 giving some a chance to secure the ***Solomon Islands.*** Brian operates out of a four-wheel drive and a stainless steel whip antenna.

* As usual ***New Caledonia, Wallis, French Polynesia, Hawaii*** etc are with us all with good signals, also at odd times ***Papua New Guinea*** and ***Nauru*** have been about.

As usual my thanks are extended to those who kept me informed by phone and mail, especially to the three AT members who sent their notes of concern over the mentioned raffle direct to me here on Nauru on short notice.
73 Jack portable,
Republic of Nauru.

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AUSTRALIAN UHF REPEATER LIST

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ACT

Canberra	2/32
Canberra	8/38

New South Wales

Albury	6/36
Armidale	4/34
Barraba	6/36
Bathurst	8/38
Bega	6/36
Belbora	1/31
Binya	3/33
Blue Mountains	2/32
Bombala	8/38
Booral	7/37
Bowral	6/36
Braidwood	
Brewarrina	1/31
Brindabella Ranges	7/37
Broken Hill	4/34
Broken Hill	7/37
Buladelah	7/37
Casino	6/36
Cobar	8/38
Coffs Harbour	6/36
Coolah	6/36
Cooma	4/34
Coonabarabran	4/34
Corowa	2/32
Corowa	5/35
Corwa	7/37
Deepwater	5/35
Deniliquin	1/31
Dungog	3/33
Eden	2/32
Glen Innes	7/37
Grafton	8/38
Grenfell	1/31
Gundagai	7/37
Gunnedah	2/32
Guyra	1/31
Warden	1/31
Hampton	1/31
Hay	4/34
Inverell	2/32
Jindabyne	1/31
Junee	5/35
Kariong	8/38
Lismore	2/32
Manilla	3/33
Monkey Hill	6/36
Mt Lambie	2/32
Murrirundi	3/33
Muswellbrook	4/34
Narrabri	2/32
Narranderra	8/38
Narromine	5/35
Narromine	6/36
Newcastle	1/31
Newcastle	2/32
Newcastle	5/35
Newcastle	6/36
Nundle	7/37
Orange	3/33
Port Macquarie	2/32
Sydney	5/35
Sydney (south)	1/31
Sydney (west)	3/33
Sydney (outer-west)	4/34
Sydney (north)	7/37
Tamworth	4/34
Tenterfield	3/33
Tumbarumba	3/33
Tumut	6/36
Tweeds Heads	4/34
Wagga Wagga	1/31
Wagga Wagga	5/35
Walbundrie	2/32
Walcha	2/32
Walcha	6/36
Walcha	8/38
Warrumbungles	1/31
Wingham	1/31
Wilcannia	1/31
Wollongong	8/38
Northern Territory	
Bushy Park	1/31
Darwin	1/31
Erldunda Station	3/33
Katherine	2/32
Maryvale Station	4/34
Mt Swan	2/32

Queensland

Alpha	2/32
Atherton	8/38
Amiens	8/38
Ayr	3/33
Barcaldine Downs	1/31
Bathurst Heads	1/31
Bauhina Downs	4/34
Biloela	7/37
Blackall	8/38
Blackwater	6/36
Brisbane	1/31
Brisbane	5/35
Brisbane	7/37
Bundaberg	4/34
Bundaberg	7/37
Cairns	3/33
Chinchilla	8/38
Clermont	6/36
Clermont	7/37
Crows Nest	6/36
Dimbulah	6/36
Dirranbandi	8/38
Double Island Point	3/33
Edward River	3/33
Emerald	8/38
Gladstone	6/36
Gold Coast	3/33
Goondiwindi	4/34
Gympie	2/32
Gympie	5/35
Gympie	7/37
Hervey Bay	8/38
Hughenden	1/31
Ingham	2/32
Inglewood	1/31
Innisfail	1/31
Ipswich	4/34
Jericho	4/34
Kilcoy	3/33
Lakeland Downs	2/32
Longreach	3/33
Mackay	3/33
Mackay	6/36
Marlborough	2/32
Maryborough	6/36
Maxwelton	2/32
Miles	6/36
Monto	3/33
Moranbah	4/34
Moura	1/31
Mt Isa	1/31
Mundubbera	6/36
Murgon	7/37
Quilpie	2/32
Rockhampton	1/31
Rockhampton	4/34
Roma	1/31
Springsure	3/33
Sunshine Coast	6/36
Sunshine Coast	8/38
Tambo	6/36
Taroom	2/32
Thargomindah	6/36
Toowoomba	2/32
Toowoomba	4/34
Townsville	1/31
Townsville	4/34
Wavell Heights	2/32
Warwick	1/31
Wide Bay	1/31
Yaraka	7/37

South Australia

Adelaide	1/31
Adelaide	3/33
Adelaide	5/35
Angaston	4/34
Blinman	3/33
Carrietown	1/31
Ceduna	1/31
Clare	7/37
Cleve	2/32
Coonalpyn	6/36
Coppudurba Hill	1/31
Hawker	7/37
Kangaroo Island	4/34
Manum	8/38
Mt Bryan	8/38
Mt Gambier	5/35
Mt Gambier	7/37
Myponga	2/32
Naracoorte	4/34
Orroroo	2/32
Port Lincoln	8/38
Port Pirie	4/34
Renmark	6/36
Snowtown	6/36
Tarcoola	6/36
Wilkatana	8/38
Yorketown	7/37

Tasmania

Burnie	8/38
Central Highlands	7/37
Devonport	1/31
East Coast	6/36
Flinders Island	1/31
Hobart	1/31
Hobart	5/35
Launceston	2/32
Launceston	6/36
Midlands	4/34
North East Coast	3/33
North West Coast	4/34
North West Coast	6/36
West Coast	2/32

Victoria

Alexandra	1/31
Ballarat	2/32
Ballarat	5/35
Bairnsdale	7/37
Beech Forest	3/33
Bendigo	4/34
Cavendish	8/38
Currajung	4/34
Echuca	6/36
Euroa	3/33
Falls Creek	3/33
Foster	6/36
Geelong	4/34
Halls Gap	6/36
Hamilton	5/35
Harcourt	8/38
Hawkesdale	4/34
Horsham	3/33
Kerang	2/32
Lavington	4/34
Mansfield	2/32
Melbourne (north)	1/31
Melbourne (metro)	3/33
Melbourne (metro)	5/35
Melbourne (south)	7/37
Mildura	3/33
Moe	2/32
Mornington Pen.	8/38
Mortlake	7/37
Mt Cann	8/38
Mt Concord	6/36
Mt Delegate	3/33
Mt Terrible	8/38
Myrtleford	8/38
Penshurst	1/31
Shepparton	7/37
St Arnaud	1/31
Swifts Creek	1/31
Talangatta	7/37
Wangarrata	6/36
Waubra	7/37

West Australia

Albany	3/33
Augusta	7/37
Bencubin	2/32
Boyup Brook	4/34
Bunbury	2/32
Carnamah	2/32
Carnarvon	2/32
Coolgardie	7/37
Darkin	6/36
Denmark	1/31
Esperance	4/34
Kalgoorlie	2/32
Kambalda	1/31
Katanning	1/31
Kellerberrin	1/31
Kulin	4/34
Lancelin	4/34
Mandurah	7/37
Manjimup	6/36
Margaret River	6/36
Meekatharra	1/31
Merredin	2/32
Mia Mia	1/31
Mt Manypeaks	6/36
Mt Barker	5/35
Mt Barrow	7/37
Mt Saddleback	1/31
Mt Solus	4/34
Nannup	2/32
Perth	1/31
Perth	3/33
Perth	5/35
Perth	8/38
Ravensthorpe	8/38
Stirling Ranges	7/37
Wickham	1/31
Wongan Hills	8/38
Wyalkatchem	6/36
York	7/37

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